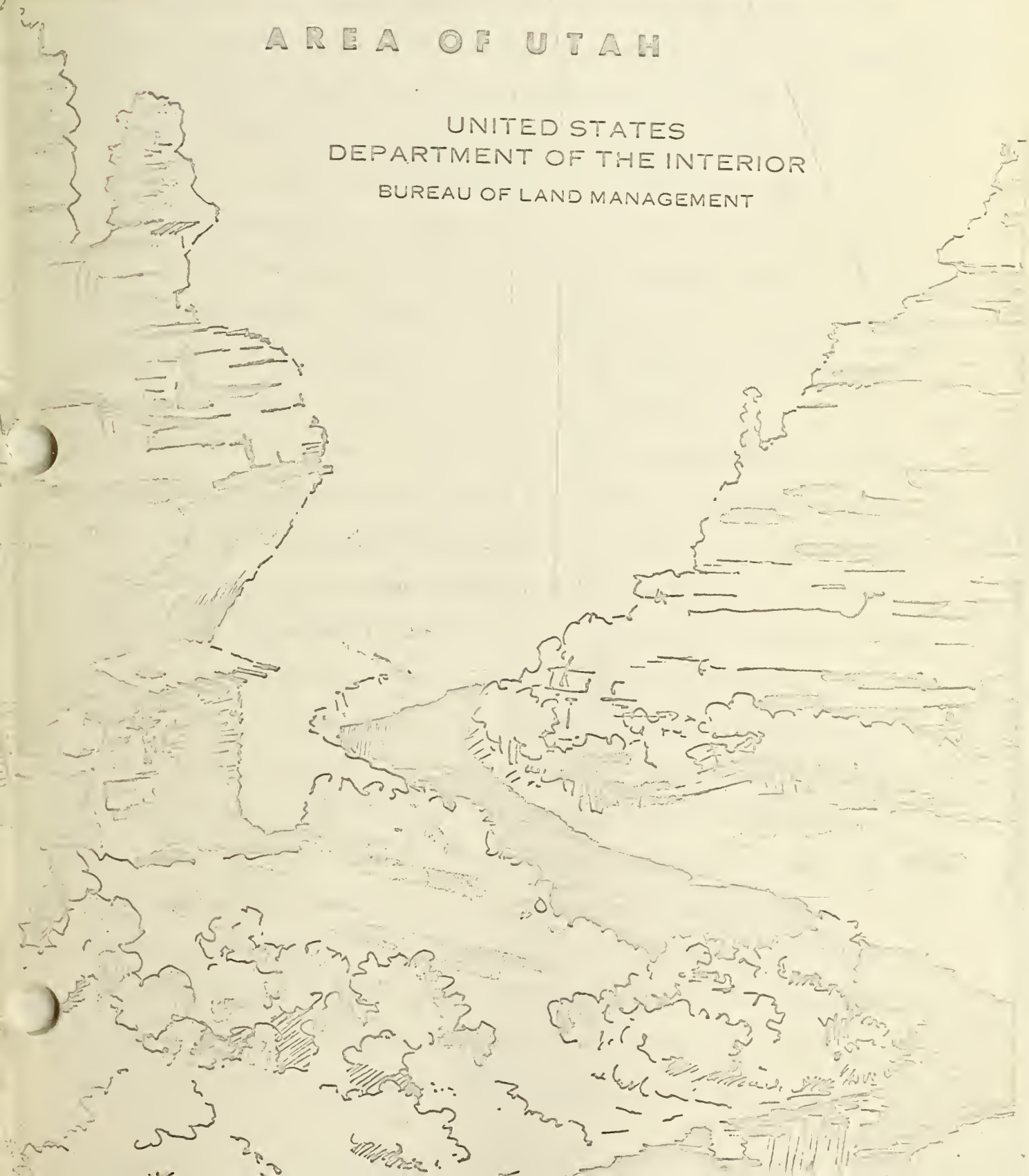
a study of the ARCHEOLOGICAL AND RECREATIONAL RESOURCES OF THE FOUR CORNERS AREA OF UTAH

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



INTRODUCTION

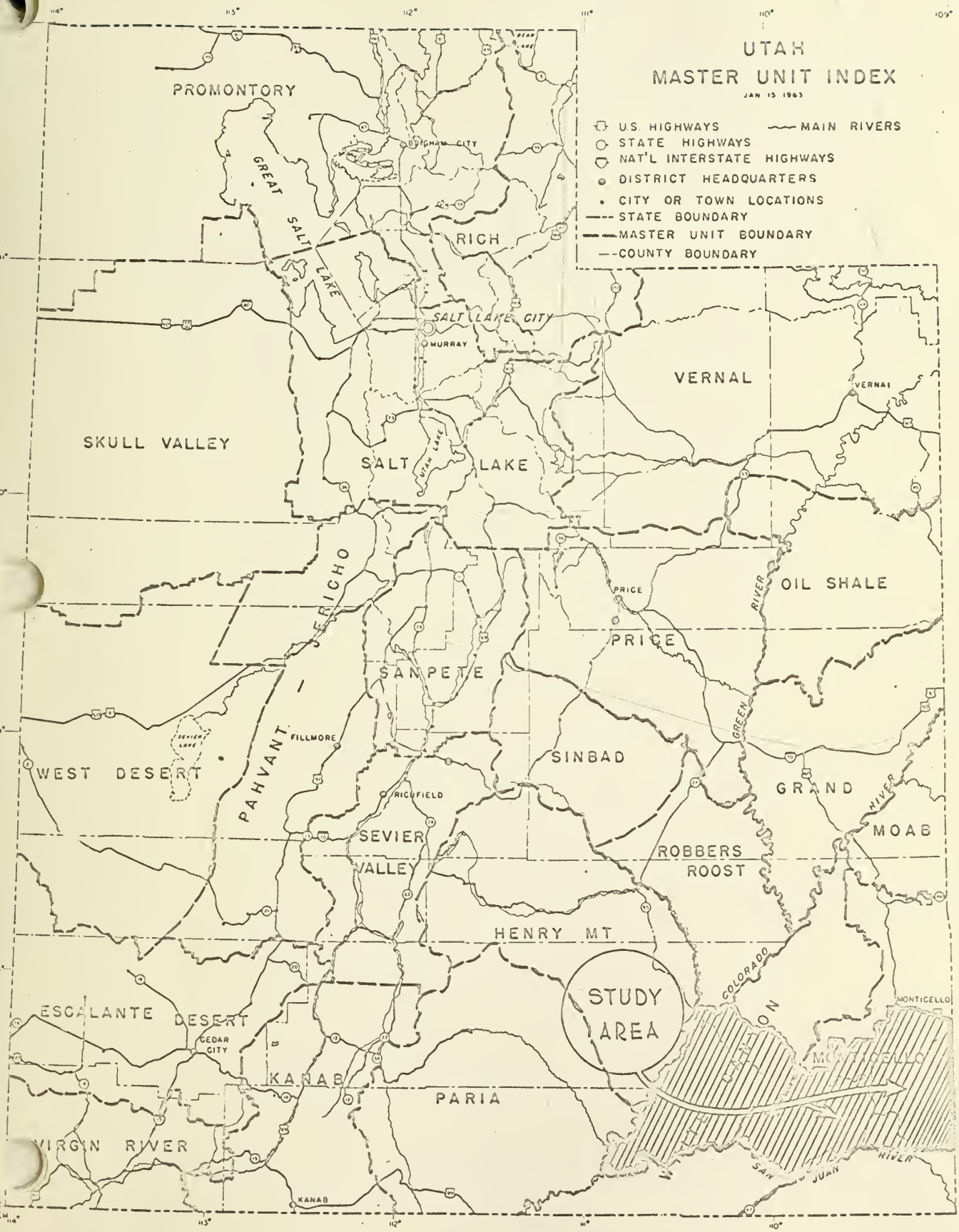
For many years, unauthorized persons have been carrying away great amounts of artifacts from the ruins of the ancient Anasazi Indian culture in southern Utah. Increased illegal activity in the Four Corners Area of Utah and Colorado during the summer and fall of 1963 aroused public sentiment to the point that reports reached the Office of the Secretary. The Director, Bureau of Land Management, was directed by the Secretary to conduct an immediate investigation of these violations of the Antiquities Act. By memorandum dated September 5, 1963, the Director charged the State Directors of Colorado and Utah with the responsibility of carrying out this investigation. A preliminary investigation was conducted, the results of which were forwarded to Washington on October 9, 1963.

It was concluded, in this report, that a comprehensive policing action should be initiated immediately and extended for a 60-day period. A four-man team composed of State and District personnel was dispatched to the Four Corners Area. To fully utilize this manpower, it was determined that they should accomplish three objectives concurrently; first, to provide a seven day per week patrol action aimed at curtailing further illegal activities; second, to conduct an archeological and recreation inventory; and third, to analyze this data and prepare a recommended action program.

During the ensuing period from October 24 to December 21, there were two men or more in the field continuously performing inventory work and patrolling. Data assembled during this period were coordinated with information obtained from the archeological staff at Mesa Verde National Park, Brigham Young University Archeology Department, and the Department of Anthropology and the Bureau of Economic and Business Research at the University of Utah. A concerted effort was made to sift out the most

accurate and factual information.

The purpose of this report, is; first, to identify and define the archeological resource; second, to evaluate its historical or scientific and recreation potentials; and third, to develop an appropriate and effective plan for protection and utilization of the resource.


UTAH
MASTER UNIT INDEX
JAN 15 1963
U.S. HIGHWAYS
STATE HIGHWAYS
NAT'L INTERSTATE HIGHWAYS
DISTRICT HEADQUARTERS
CITY OR TOWN LOCATIONS
STATE BOUNDARY
MASTER UNIT BOUNDARY
COUNTY BOUNDARY
MAIN RIVERS
PROMONTORY
GREAT SALT LAKE
BRIGHAM CITY
RICH
SALT LAKE CITY
MURRAY
VERNAL
VERNAL
SKULL VALLEY
SALT LAKE
UTAH LAKE
JERICHO
PRICE
OIL SHALE
PRICE
SANPETE
PAHVANT
FILLMORE
SEVIER LAKE
WEST DESERT
SINBAD
GREEN RIVER
GRAND
MOAB
RICHFIELD
SEVIER VALLEY
ROBBERS ROOST
HENRY MT
STUDY AREA
COLORADO
MONTICELLO
ESCALANTE DESERT
CEDAR CITY
KANAB
PARIA
VIRGIN RIVER
SAN JUAN RIVER
KANAB

Overlay no. 2

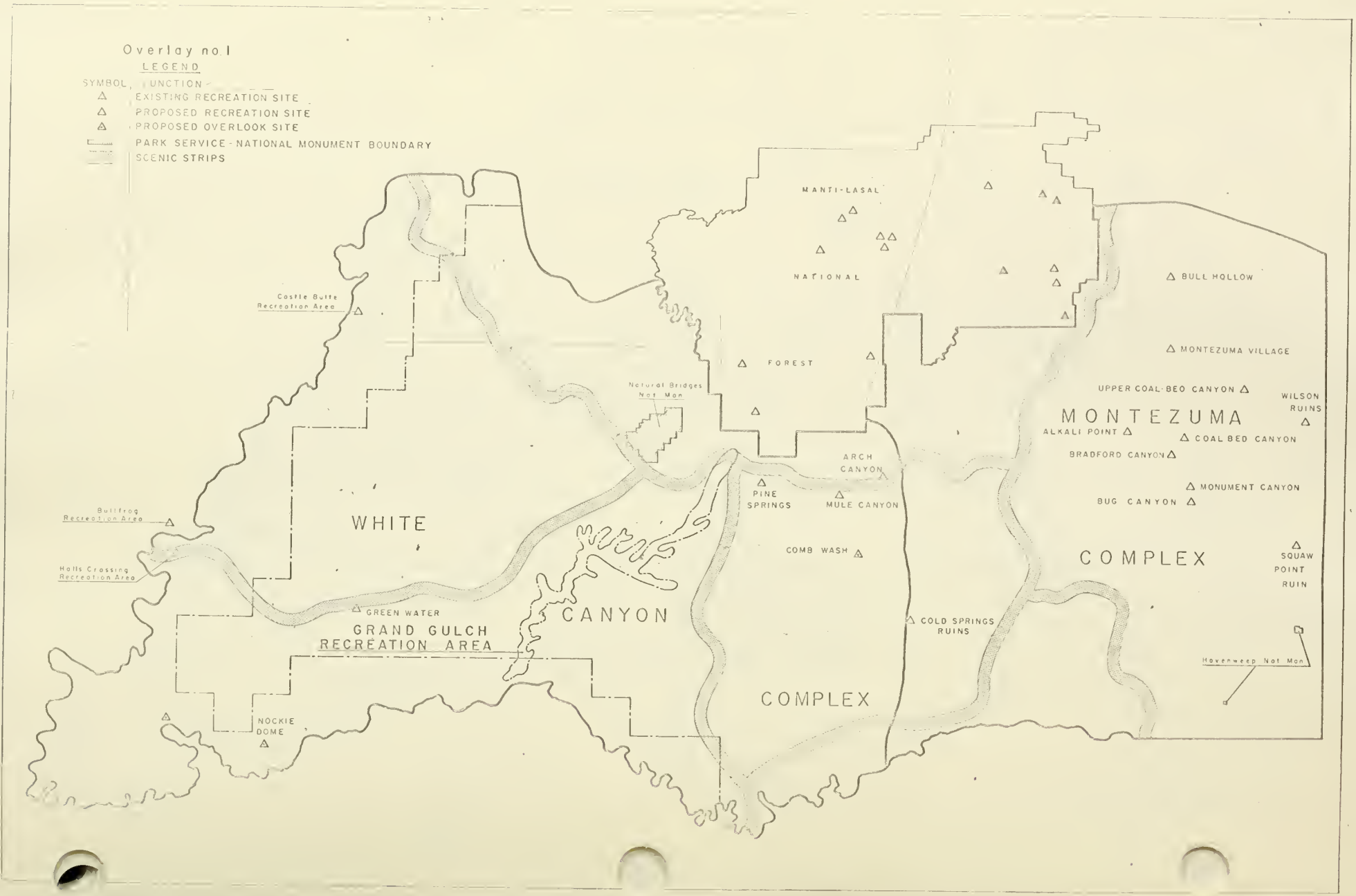
QUANTITATIVE ANALYSIS OF THE ANASAZI RUINS

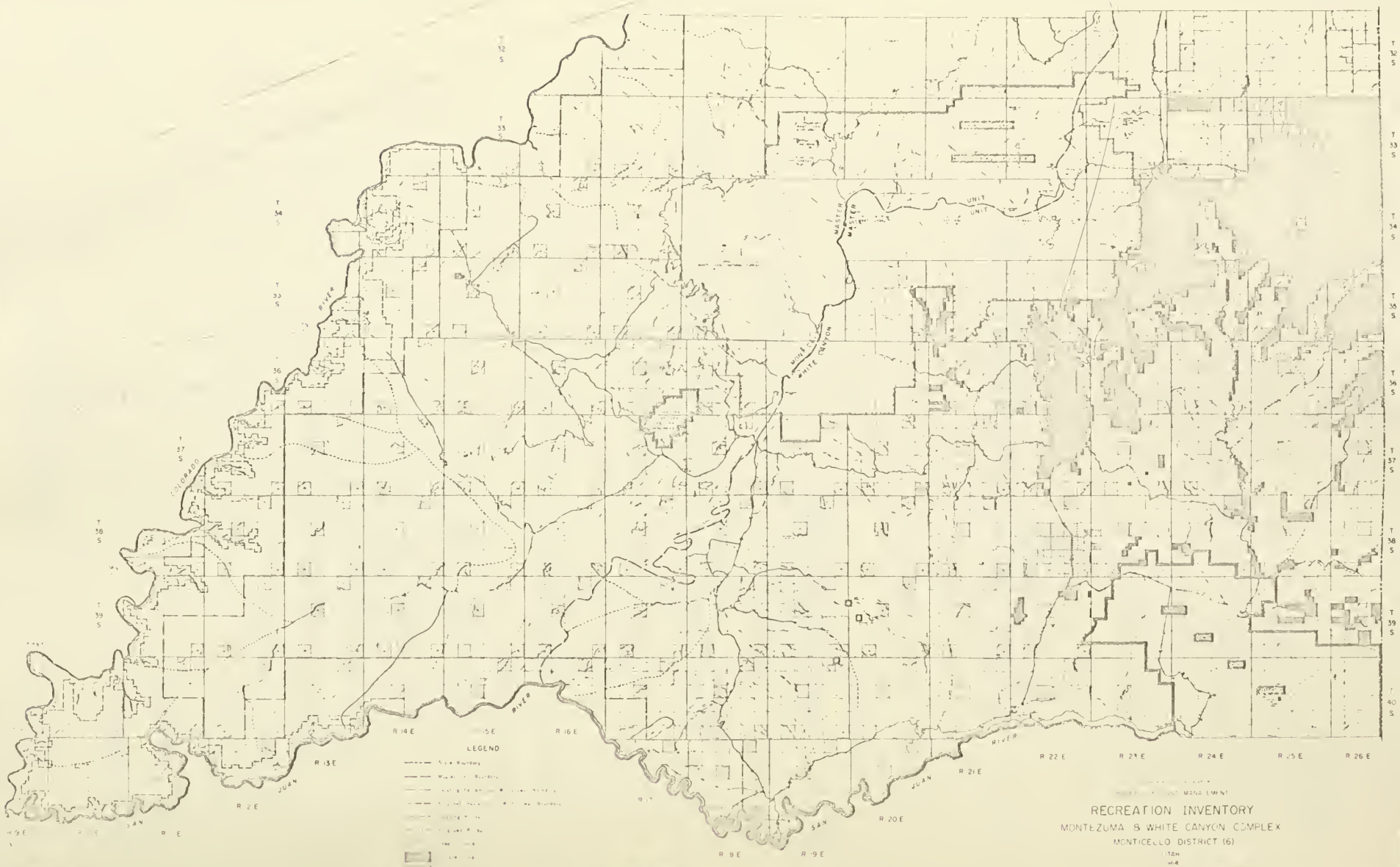
O Represents 25 ruins

o Represents 1 ruin

NOTE

IT IS ESTIMATED THAT THE RUIN LOCATIONS SHOWN ON THIS OVERLAY REPRESENTS LESS THAN TEN PER CENT OF THE LOCATABLE RUINS.


Overlay no. I
LEGEND
SYMBOL FUNCTION
EXISTING RECREATION SITE
PROPOSED RECREATION SITE
PROPOSED OVERLOOK SITE
PARK SERVICE - NATIONAL MONUMENT BOUNDARY
SCENIC STRIPS
MANTI-LASAL
NATIONAL
FOREST
Castle Butte Recreation Area
Natural Bridges Nat Mon
Bullfrog Recreation Area
Halls Crossing Recreation Area
WHITE
CANYON
COMPLEX
GREEN WATER
GRAND GULCH RECREATION AREA
NOCKIE DOME
PINE SPRINGS
MULE CANYON
ARCH CANYON
COMB WASH
COLD SPRINGS RUINS
BULL HOLLOW
MONTEZUMA VILLAGE
UPPER COAL-BED CANYON
WILSON RUINS
MONTEZUMA
ALKALI POINT
COAL BED CANYON
BRADFORD CANYON
MONUMENT CANYON
BUG CANYON
COMPLEX
SQUAW POINT RUIN
Hovenweep Nat Mon


RECREATION INVENTORY
MONTEZUMA & WHITE CANYON COMPLEX
MONTICELLO DISTRICT (6)
LEGEND
MASTER UNIT
WHITE CANYON
COLORADO RIVER
SAN JUAN RIVER
T 32 S
T 33 S
T 34 S
T 35 S
T 36 S
T 37 S
T 38 S
T 39 S
T 40 S
R 2 E
R 8 E
R 9 E
R 13 E
R 14 E
R 16 E
R 20 E
R 21 E
R 22 E
R 23 E
R 24 E
R 25 E
R 26 E

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PART I

SUMMARY

PART I SUMMARY

Findings

1. The Four Corners Area is the apparent center of the ancient Anasazi culture. The highest concentration of ruins are in Montezuma Canyon and its drainages. However, colonies of ruins are scattered over the entire study area. See Fig. 5 for the area of highest development and Overlay No. 2 to the general map (Fig. 1) for the location of known ruins in the study area.

2. The ruins in the study area have significant archeological value which if the present trend continues could be seriously depleted. The surface artifacts have been crushed or carried to and fro until they have little or no scientific value. Illegal excavation for subsurface items has been going on for many years, however, recently there has been a definite increase in this activity.

3. The maximum potential of the archeological resource can be realized by: first, segregating those areas having the greatest potential for scientific research and strictly controlling incompatible uses; second, allowing the public to collect surface artifacts and to perform controlled digging in the remaining areas; and, third, excavating with the dual objective of scientific research and stabilization for recreation purposes.

4. The district offices do not have personnel technically qualified to execute a valid archeological inventory. Non-technical personnel can be utilized in performing archeological inventory work but they must be trained and supervised by a competent archeologist if the results are to be meaningful and useful.

5. The problems which are prevailing in the area presently will be greatly accentuated in the future. Projection of current trends

indicates more people, better access, and less control in the future. It is estimated that in 1964, 26,000 people will visit this area; by 1970, this figure will have increased to 380,000 and by 1975, visitor use will have reached 760,000. Many canyons which heretofore were practically isolated from civilization will be accessible via boat transporation on Lake Powell. Road construction is expected to reach an all-time high during the next 10 years.

Recommendations

IMMEDIATE PROTECTION PROGRAM

1. A Public Relations Program

A public education campaign must be carried out concurrently at the National, State and local levels consisting of:

a. An official announcement by the Secretary of the scope of the entire program.

b. News releases for dissemination to newspapers, television, radio and magazines at all levels. Caution must be exercised in this regard. Over publicity of the ruins in southern Utah may have an adverse effect.

c. Informing public officials at all levels of government of the urgency of the situation.

d. Arranging for knowledgeable representatives of the Bureau to present to interested organizations, schools, groups and clubs:

(1) the importance of the archeological resource;

(2) the history and purpose of the Antiquities Act;

(3) the positive steps being taken by BLM and others;

(4) The penalties which will be levied on violators of the act.

e. Preparation of a leaflet at the State Office which will

give a brief resume on the origin and purpose of the Antiquities Act, the development program in the area, and the responsibilities which BLM has to enforce the provisions of the act.

f. A planned and systematically executed person-to-person education program. Major emphasis will be placed on gaining the understanding and sympathy of influential people who can effect, in a positive way, the protection program.

2. Patrolling and Policing

a. It is recommended that three multiple-use supervision areas be established with a permanent employee assigned on a year-round basis to each area. Presently, the study area is being patrolled by one individual whose primary responsibility is grazing. By splitting the area into three use supervision areas, it will be possible to make true multiple use supervisors. They will have responsibility for archeology, recreation, grazing, forestry, land uses, trespasses, etc.

b. Small administrative structures will be constructed to house the supervisors in strategic locations within their respective areas. The supervisors will be strictly field personnel and will not maintain files, etc., in their headquarters.

c. Primary responsibility for these supervisors will depend on the season. During the tourist season, their primary responsibility will be to enforce the Antiquities Act, give guidance and interpretative services to visitors, assist in the inventory of archeological and recreation sites and to ensure the safety and well-being of visitors to the area. The heavy recreation use season for most of the area is from mid-March through late November. The approximate overlap between the summer recreation "season" and the fall-winter grazing "season" would be about 45 to 50 days.

3. Use of Physical Devices for Protection

a. Protective barriers

There are several sites which need immediate protection from domestic and wild animals, heavy equipment, natural erosion and man. A four-foot high chain link fence will provide immediate protection and, if properly planned, will channelize visitor traffic so the ruins can be viewed yet will restrict public access into the interior of the ruins. The following sites will require immediate attention: Grand Gulch, Mule Canyon, Comb Wash Overlook, Arch Canyon, Bradford Canyon, Squaw Point, Alkali Point, Coal Bed Canyon, Cold Spring, Wilson Ruin, Montezuma Village, Bug Canyon, and Monument Canyon. (See development schedule for additional details.)

b. Stabilization

Several of the key sites inventoried in this study have walls still standing which have been weakened to the point that the slightest pressure exerted against them would cause them to collapse. Sites in this category which are in critical need of immediate stabilization are: Grand Gulch, Mule Canyon, Comb Wash Overlook, Bradford Canyon and Squaw Point.

c. Check dams and diversion ditches

The following sites will require the construction of check dams and diversion ditches to halt the devastating effect of erosion resulting from flash floods; Lower Coal Bed, Monument Canyon, Bug Canyon, Montezuma Village, Bradford Canyon and several sites in Grand Gulch.

LONG RANGE MANAGEMENT PROGRAM

1. Inventory

An inventory and mapping program utilizing scientific archeological research methods and techniques will be initiated beginning FY 1965. This inventory will be conducted by a competent archeologist. All existing data will be explored prior to beginning actual field work. The goal of this inventory will be to identify, classify and evaluate all the archeological sites in the district.

2. Management Plan

Based on the findings of the inventory and evaluation, a long range management plan will be developed to provide for protection and utilization of the archeological sites.

3. Multipurpose Development

Beginning in FY 1966 and continuing through FY 1975 at least one site per year will be excavated and stabilized. See the development schedule for priorities and time tables. Sites having high potential for recreation will have top priorities. The excavation and stabilization will be contracted to one of theState universities. The district archeologist will be responsible for (1) preparation of the contract, (2) inspection of the work, and (3) for the development and construction of the interpretative facilities to be installed at the completed site.

4. A Continuing Protection Program

a. The education program as outlined earlier in the study will be continued.

b. Patrolling will be intensified as the visitor use in the area increases. See the personnel summary chart for personnel requirements from FY 1964 through FY 1975.

c. As the need arises, physical devices such as fencing,

stabilization, and check dams will be utilized to preserve valuable sites.

5. Cooperative Agreements and/or Land Exchange

a. Several key sites inventoried in this study are either entirely or partially on State or private lands. Immediate action will be taken to consummate agreements with these land owners to protect and preserve these critical sites. If an agreement cannot be reached to effectively protect the ruins, a concerted effort will be made to consummate a land exchange. Sites entirely or partially privately owned are: Wilson Ruin, Arch Canyon, Montezuma Village and Bull Hollow. Sites entirely or partially owned by the State of Utah are: Lower Coal Bed, Bug Canyon, Mule Canyon and 1,720 acres in Grand Gulch.

6. An Archeological Inventory

a. Development of the archeological resource is one of the major land use considerations in the Monticello District. To carry out an effective protection and management program, the district must have a competent archeologist on the staff. The immediate responsibility of the archeologist will be to conduct a thorough and continuing inventory of the archeological resource.

7. Land Purchase and Exchange

A land exchange program will be continued in an effort to gain control of the archeological resource sites and incorporate them into the management program.

ACTION PROGRAM FOR RECREATION

1. Survey and Design

Where feasible, a recreation development program will be correlated with the scientific archeological program. Preparation of recreation site plans will begin at the earliest possible date for the following sites; Grand Gulch Recreation Area, Mule Canyon Ruin, Greenwater Camp Site, Comb Wash Overlook, Arch Canyon Ruin, Bradford Canyon Ruin, Wilson Ruin, Squaw Point Ruin, Alkali Point Ruin, and Pine Spring Picnic Site. The sites are listed in order of priority.

2. Scenic Strips and Buffer Zones

A scenic strip will be established along Utah Highways 95, 261 and 47, the Halls Crossing-Maverick Point road, and portions of U. S. 160. These strips are dedicated to the protection and enhancement of the scenic beauty and other factors that contribute to the value and popularity of the area concerned. See Overlay No. 1 to the general recreation map for the details. Buffer zones have been established around each site. See the individual inventory form for details concerning this.

3. Recreation Areas

Thus far, only one recreation area has been delineated and this is the Grand Gulch Area. There are other areas which may come under this category, however, additional inventory work must be completed before a final decision can be rendered. The Grand Gulch Recreation Area will come under the ORRRC Classification V, a primitive area. See the development schedule for a list of facilities to be developed in this area.

4. Mining Claims

A minerals investigation should be conducted immediately on all the sites mentioned in this study to determine whether the sites are covered by mining claims and what action must be taken to eliminate land conflicts.

5. Collection of Visitor Use Data

Car counters will be placed at the Halls Crossing road, one-fourth mile south of the U-95 intersection and on the Montezuma Canyon road, near the Bradford site. Visitor registers will be placed at the following sites: Green Water, Arch Canyon, Bradford Canyon, Bull Hollow, Comb Wash, Mule Canyon, and one at each of the entrances into Grand Gulch. A periodic check will be made to obtain data for conversion factors to convert the data collected from these two sources into valid visitor use information.

6. Inter-district Programs

An inter-district land utilization study should begin immediately by the Monticello and Richfield districts to determine the highest and best use of the lands adjacent to Utah Highway 95. Special consideration will be given to buffer zones and scenic strips, potential business sites, roadside pullouts, and scenic views or overlooks.

7. Geologic Study of Well Sites

A request will be submitted to the Geological Survey for the services of a geologist to determine the feasibility of drilling wells for culinary water at the following sites: Maverick Point, Arch Canyon, Bradford Canyon, and Comb Wash Overlook.

*PERSONNEL SUMMARY

FY 1965	New Positions	Grade	Salary	Other Costs
**Archeologist	1	GS-9	$7,030	$4,000
Archeologist Aid (Temp.)	3	GS-4	12,645	1,800
**Use Supervisors	2	GS-7	11,590	8,000
**Landscape Architect	1	GS-9	7,030	4,000
Recreation Assistant (Temp.)				
FY 1966				
Archeologist Aid (Temp.)	2	GS-4	8,430	1,200
Recreation Assistant (Temp.)	1	GS-4	4,215	600
**Recreation C & M Supervisor	1	GS-7	5,795	4,000
FY 1967				
Recreation Assistant (Temp.)	3	GS-4	12,645	1,800
FY 1968				
Recreation Assistant (Temp.)	4	GS-4	16,860	2,400
FY 1969				
Recreation Assistant (Temp.)	5	GS-4	21,075	3,000
FY 1970				
**Recreation Specialist	1	GS-11		4,000
Recreation Assistant (Temp.)	6	GS-4	25,290	3,600
FY 1971				
Recreation Assistant (Temp.)	6	GS-4	25,290	3,600
FY 1972 through FY 1975				
Recreation Assistant (Temp.)	6	GS-4	25,290	3,600

Note

1. Archeologist Aids will assist the District Archeologist in inventory work and stabilization.
2. Recreation Assistants will have the following duties; maintenance and upkeep of recreation sites, enforcement of the Antiquities Act, collect visitor use data, provide information for visitors and lookout for the well being and safety of visitors.

* This chart represents the number and type of new positions necessary to carry out the archeological and recreation management programs.

** Permanent positions which will continue through FY 1975.

PROJECT	1964 Cost	1965 Cost	1966 Cost	1967 Cost	1968 Cost	1969 Cost	1970 Cost	1971 Cost	1972 Cost	1973 Cost	1974 Cost	1975 Cost	Balance to be Completed ($1,000)	Total Cost ($1,000)
Bradford Canyon Ruin														
Protective Fence (300 ft.)	3													3
Flood and erosion control			20											20
Campground (total 35 units)				15			15							40
Stabilization and interpretative					30								10	30
Bull Hollow														
Protective fencing (300 ft.)	3													3
Protection & sanitation facilities		5												5
Campground (Total 30 units)													35	35
Squaw Point														
Protective fencing (300 ft.)	3													3
Stabilization and interpretative	1												30	31
Upper Coal Bed														
Protective fencing (500 ft.)	5													5
Stabilization and interpretative													20	20
Alkali Point														
Protective fencing (1,000 ft.)	10													10
Cold Spring														
Protection and stabilization	3													3
Picnic ground (total 10 units)													12	12
*Wilson Ruin														
Protective fencing (1,000 ft.)		10												10
Stabilization and interpretative													100	100
Picnic site													25	25
*Montezuma Village														
Protective fencing (2.5 miles)		10												10
Flood and erosion control			30											30
Stabilization and interpretative						20							100	120
*Bug Canyon														
Protective fencing (500 ft.)		5												5
Flood and erosion control			20											20
Stabilization and interpretative											20			20
*Monument Canyon														
Protective fencing (500 ft.)		5												5
Flood and erosion			15											15
Stabilization and interpretative									20					20
*Lower Coal Bed														
Protective fencing (1,500 ft.)		12												12
Flood and Erosion Protection			75											75
Stabilization and interpretative								20					30	50
TOTAL	28	47	160	15	30	20	15	20	20		20		362	737

*Sites located wholly or partially on State or private lands.

DEVELOPMENT SCHEDULE FOR HITE CANYON COMPLEX

PROJECT	1964 Fam. Unit	1964 * Cost	1965 Fam. Unit	1965 * Cost	1966 Fam. Unit	1966 * Cost	1967 Fam. Unit	1967 * Cost	1968 Fam. Unit	1968 * Cost	1969 Fam. Unit	1969 * Cost	1970 Fam. Unit	1970 * Cost	1971 Fam. Unit	1971 * Cost	1972 Fam. Unit	1972 * Cost	1973 Fam. Unit	1973 * Cost	1974 Fam. Unit	1974 * Cost	1975 Fam. Unit	1975 * Cost	Balance to be Completed ($1000)	Total Cost ($1000)
Grand Gulch Recreation Area																										
Protective fencing		3																								3
Foot trails				18																					20	38
Stab. & Restore (Arch.)				20		20														20						60
Maverick Point Bldg. Complex				46																						46
Maverick Pt. Picnic Site			10	10																						10
Primitive camps						25																				25
Mule Canyon Recreation Site																										
Protective fence (500')		6																								6
Stab. & Restore (Arch.)				20																				20		40
**Campground					25	30							25	30							25	30				90
Trails								20																		20
Green Water Campground																										
Protection & Sanitary Fac.		3																								3
**Campground					10	12											20	25								37
Arch Canyon Campground																										
Protection & sanitary fac.		3																								3
**Campground									25	30															25	55
Stab. & Protection (Arch.)												20														20
Foot trails												15														15
Comb Wash Overlook																										
Stab. & Protection		5						~~20~~																		25
Overlook development								25																		25
**Picnic ground							5	5																		5
Foot trails												15.														15
Pine Spring Picnic Site																										
Protection & sanitary fac.		3																								3
**Picnic ground																							20	25	30	55
TOTALS		23		114		87		70		30		50		30				25		20		30		45	75	599

*Cost in thousands of dollars

**Camping and picnicking will be allowed in all sites until such time that they beme incompatible.

DEVELOPMENT SCHEDULE FOR WHITE CANYON COMPLEX

PROJECT	1964 Fam. Unit	1964 * Cost	1965 Fam. Unit	1965 * Cost	1966 Fam. Unit	1966 * Cost	1967 Fam. Unit	1967 * Cost	1968 Fam. Unit	1968 * Cost	1969 Fam. Unit	1969 * Cost	1970 Fam. Unit	1970 * Cost	1971 Fam. Unit	1971 * Cost	1972 Fam. Unit	1972 * Cost	1973 Fam. Unit	1973 * Cost	1974 Fam. Unit	1974 * Cost	1975 Fam. Unit	1975 * Cost	Balance to be Completed ($1000)	Total Cost ($1000)
Grand Gulch Recreation Area																										
Protective fencing		3																								3
Foot trails				18																					20	38
Stab. & Restore (Arch.)				20		20														20						60
Maverick Point Bldg. Complex				46																						46
Maverick Pt. Picnic Site			10	10																						10
Primitive camps						25																				25
Hule Canyon Recreation Site																										
Protective fence (500')		6																								6
Stab. & Restore (Arch.)				20																				20		40
**Campground					25	30							25	30							25	30				90
Trails								20																		20
Green Water Campground																										
Protection & Sanitary Fac.		3																								3
**Campground					10	12											20	25								37
Arch Canyon Campground																										
Protection & sanitary fac.		3																								3
**Campground									25	30															25	55
Stab. & Protection (Arch.)												20														20
Foot trails												15														15
Comb Wash Overlook																										
Stab. & Protection		5						~~20~~																		25
Overlook development								25																		25
**Picnic ground							5	5																		5
Foot trails												15.														15
Pine Spring Picnic Site																										
Protection & sanitary fac.		3																								3
**Picnic ground																							20	25	30	55
TOTALS		23		114		87		70		30		50		30				25		20		30		45	75	599

*Cost in thousands of dollars

**Camping and picnicking will be allowed in all sites until such time that they become incompatible.

PART II ARCHEOLOGICAL RESOURCE

What is the Resource?

1. INTRODUCTION

Remnants of the ancient Anasazi (Pueblo) Indian culture are found in abundance in southern Utah with the greatest concentration located in the Four Corners Area. To manage a resource, one must understand what the resource really is, what potentials it has, and how it can best be managed to do the greatest good for the most people. Gradually, BLM has staffed its districts with technical personnel specialized in the management of specific resources. However, no provision has been made for archeological resource specialists.

Under the multiple use concept of resource management, every resource must be identified and managed so the greatest benefit can be derived. That the archeological values do represent a resource is a well accepted fact. However, one does not grasp the importance and scope of the resource until he has a basic understanding of origin and cultural sequence of the particular fragment of prehistoric civilization he is dealing with.

2. RESUME OF THE KNOWN ARCHEOLOGICAL SEQUENCE IN THE NORTHERN SAN JUAN DRAINAGES 1/

Earliest Culture

The origin of the earliest culture is not definitely known. It probably has some regional sub-culture of a generalized "Desert Culture" which once occupied much of the mountain and great basin country of western North America. Several sites of such a culture thought to date between 5000 and 2000 B.C. have been reported by Mohr and Sample from the Aneth

1/ Technical information furnished by Arthur F. Hewitt, Jr., Assistant Chief Park Archeologist, Mesa Verde National Park.

Area and numerous projectile points of this culture have been collected from the surface over most of southeastern Utah. It is almost certain that many other sites exist that are as yet undiscovered.

Pueblo (Anasazi) Culture

The significant era of the Pueblo culture was from about A.D. 1 to the arrival of the Spanish in the southwest when historical records begin, about A.D. 1540. (San Juan drainage abandoned by Pueblos about A.D. 1300.) Pueblo Indians still live in New Mexico and Arizona. The Anasazi or Pueblo cultural sequence is continuous, but has been divided into successive periods: the earlier called Basketmaker, and the later, Pueblo.

Geographic Location of Culture

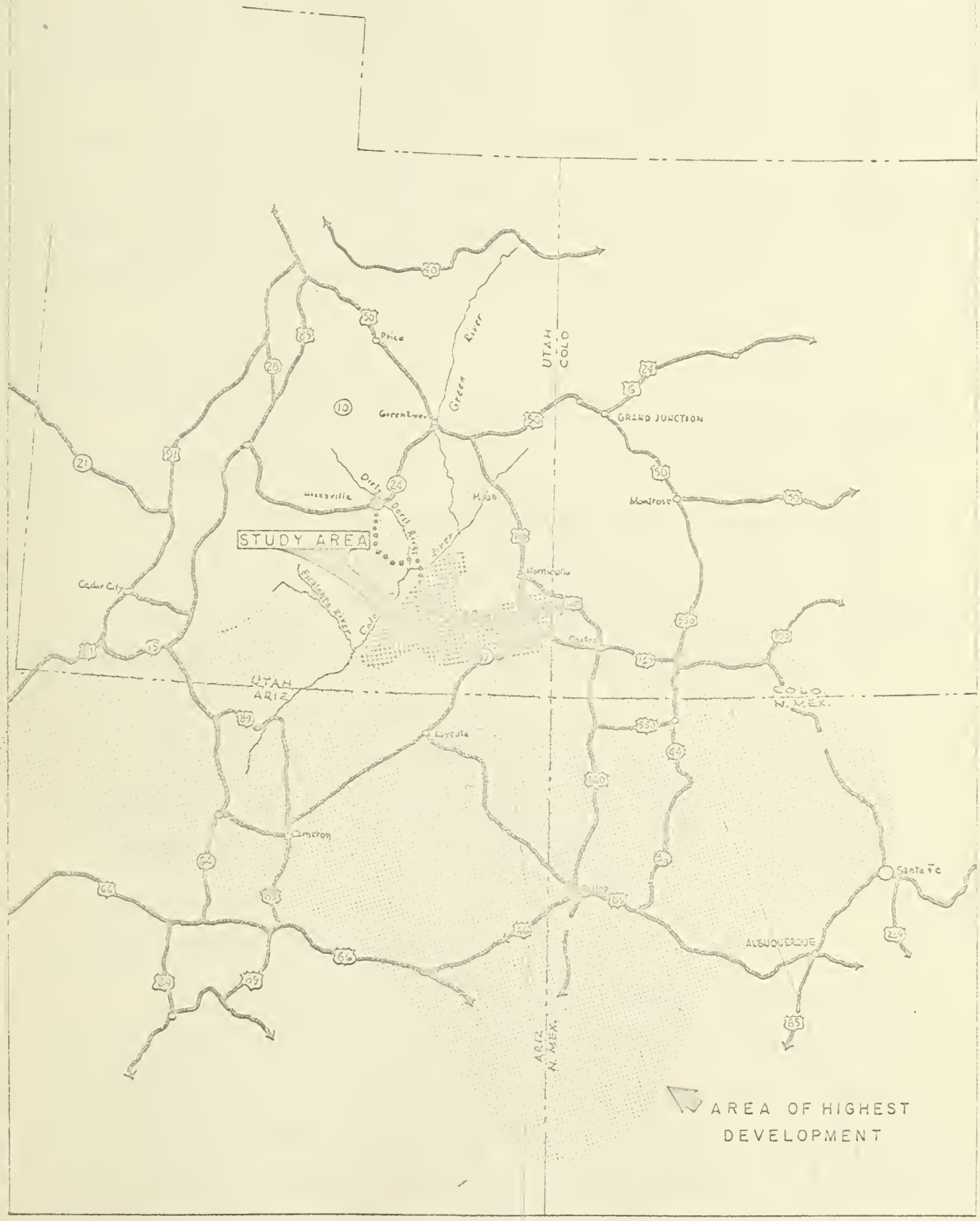
The culture is located in the plateau area of the southwest, which includes drainages of the San Juan, Little Colorado, Rio Grande, upper Gila and Salt rivers, much of Utah and some of eastern Nevada. The Four Corners Area of the San Juan drainage is the apparent center. (See Fig. 5.)

Basketmaker Period

In summary, this part of the Anasazi culture was fully established in the San Juan drainage in the early centuries of the Christian era, and the sequence ended, in most areas, during the A.D. 700's. (A hunting-gathering culture must have preceded this period.)

In the earliest part of this period, people were dependent on both hunting and agriculture. Their chief weapon was the atlatl or dart thrower. Squash and corn were the only farm crops, but there was much use of wild plant foods and game. Pottery was absent, but an abundance of baskets, bags, sandals and fur-covered blankets were manufactured. Slab-lined storage cists were common and crude, early houses were constructed in some areas.

ANASAZI CULTURE



During the later part of the period, there was considerable modification and development. Pottery was manufactured, the bow and arrow came into use, the hafted axe developed, and beans were added to the farm produce; the pithouse became somewhat standardized and true village life began. Some houses were built in caves, but the majority were constructed in open valleys and on mesa tops. Some of the finest materials which are representative of the early Basketmaker horizon are found in southeastern Utah.

Developmental Pueblo Period

This period is one of transition and is characterized by important developments in architecture and pottery. Pithouses were first used as dwellings and later developed into highly specialized ceremonial structures or kivas. Surface living rooms were constructed of poles and adobe and later stone masonry. The widely known black-on-white and corrugated pottery developed would indicate that they faced an environment 700 to 900 years ago similar to that of the present time.

Generally speaking, there is evidence that more vegetation and wild animal life existed prior to the arrival of the white man, and that the present barren conditions, in many instances, have resulted from misuse of the area in historic times.

3. WHERE IS THE RESOURCE LOCATED?

a. In order to survive in this hot, arid and hostile country, these prehistoric tribesmen occupied areas that would afford opportunity for food, shelter, water and protection. Since they depended, basically, on agriculture for their livelihood, they chose sites which afforded tillable soil and adequate water for culinary and irrigation purposes. The heaviest concentration of developments appears on mesa tops and flat canyon bottoms.

The best preserved sites, however, are the cliff dwellings. High and protruding cliffs have protected these sites from the elements.

b. The initial intent of the study was to make a complete and thorough inventory of all the archeological sites. It soon became apparent that in the time allocated for the study, this would be physically impossible. It was estimated that less than 1% of the sites could be inventoried within reasonable distance from vehicle travel. Ground surveillance via foot or horseback would be extremely time consuming. Observation from a helicopter or light plane is possible but would be only partially effective and not monetarily feasible. It is possible to identify ruins from aerial photos, however, dense growths of pinon-juniper over the mesa tops and canyon floors render this method impractical. It was concluded that a total inventory would take several years and could be most effectively conducted by a competent archeologist assisted by college students during the summer months.

Inventory work completed in this report was limited to two areas which are critically in need of protection: Montezuma Canyon and Grand Gulch. Sites having significant archeological and recreation values were inventoried on Form 4-1644. All other sites identified are delineated on Overlay No. 2 of the general map. It is estimated that this report covers less than 10% of the total archeological sites in the study area.

4. WHAT ARE THE PRODUCTS OF THE RESOURCE?

a. Scientific

If one had to assign a value to each of the three products shown here, the scientific and historical facts extracted from this resource would probably be the most significant. Without scientific research and analysis, there could be no interpretation which, in turn, would render the

site ineffective for recreation purposes.

The following excerpt from a Time Magazine article entitled "The Shards of History", illustrates the reason why only competent archeologists are authorized to excavate and perform scientific research on public domain.

"Everywhere archaeologists, armed with all the advantages of modern science, are extending the geography of history. Aerial cameras detect the faint outlines of long-demolished walls; delicate airborne magnetometers ferret out forgotten fortifications; measurements of minute bits of carbon establish accurate dates back beyond any written record. Mummies are submitted to autopsy for a knowledge of ancient diseases. Fossilized grains of pollen testify to the climate in which they grew. Re-used writing materials, called palimpsests, are irradiated with ultraviolet light and reveal words that were erased thousands of years ago."

"The techniques are exceedingly delicate; the skills required are highly specialized. Modern archaeology has developed into an intricate and cooperative effort as its practioners have gathered a vast new library of information about the dim background of civilization."

b. Recreation

Interest and curiosity as to what has gone on in prehistoric times is inherent in varying degrees in most everyone. Our investigation revealed that the great percentage of Moki diggers that actively pursue the sport are nothing more than adventure seekers. It is true that a few persons have commercialized the pursuit and, on occasion, even the amateur sells one of his prize pots if the price is high enough. Why else would these pot hunters be so willing to contribute their find to local museums expecting only written recognition unless their interest was purely curiosity and adventure.

That people are interested in viewing the restored ruins themselves is evident in the increased attendance at Mesa Verde National Park. In 1942, they recorded 43,000 visitors to the Park; in 1963, this figure sky-rocketed to 325,000. In a desperate effort to relieve some of the pressure on the main ruins, the National Park Service is involved in a multimillion dollar project to restore another similar ruin in the same vicinity which, in turn, could take some of the pressure off of the existing ruins. Mesa Verde is reaching a saturation point in its ability to handle additional visitors. Some of this pressure would be relieved by developing significant sites on public domain. The Bureau has several significant sites close to major highways. If these sites are not developed, the public will be cheated and the BLM will not be properly managing the resource.

c. Commercial Value

Wagon loads of whole pottery, mummies and the whole gamut of Indian artifacts have been hauled out of the area to museums throughout the world, as well as to universities, private homes and even to curio shops for sale. Some of this happened about the turn of the century and has occurred in varying intensities since that time. The reaction to this has varied from indignation to indifference on the part of the local citizens. At least one community has felt that they would benefit by advertising "pot hunting" as a special attraction for tourists. Professional "pot hunters" and weekend hobby clubs are organized to systematically loot these ruins. A more recent commercial outlet is the sale of pottery shards by the pound. Firms in the east are setting these shards in plastic and making mosaics for table tops, etc. Sale of the shards on a mass basis has encouraged the use of heavy equipment to excavate the ruin. This is extremely devastating and for all practical purposes destroys the scientific value of the ruin.

5. PROBLEMS WHICH MUST BE RESOLVED BEFORE AN EFFECTIVE PROTECTION PROGRAM CAN BE EXECUTED

a. Delegation of Authority

The Act of February 6, 1905, gives the authority to the Secretaries of the Army, Agriculture and Interior to enforce the provisions of the Antiquities Act. This authority has been delegated to all employees of the National Park Service and the National Forest Service which enables them to apprehend and secure convictions from violators of the Antiquities Act on land under their jurisdiction. No such authority has been delegated to BLM which means, in effect, that prosecution of Antiquities Act violators on public domain is extremely difficult if not impossible.

b. Enforcement Image

It is interesting to note that the National Park Service, the National Forest Service and the Bureau of Land Management enforcement problems increase in a proportionate degree from a low with the former to a high with the latter. It would appear that there are two primary factors contributing to the proportionate increase in violation on public domain: (1) Both the National Park Service and the National Forest Service have been given direct authority by Act of Congress to enforce the Antiquities Act. BLM has been given the responsibility with no authority to carry out the responsibility. (2) The number of personnel per acre of land under the jurisdiction of the various agencies varies from a relatively high proportion with the National Park Service to a relatively low proportion with BLM. If BLM is to enforce the Antiquities Act and create a public image commensurate with their responsibility, they must be given authority and personnel to enforce the Act.

c. Scattered Land Pattern

The mixture of private, State and Federal lands in the study area presents a formidable enforcement and management problem. The Antiquities Act is applicable to Federal lands only; antiquities on State land are protected under Section 63-11-2, Volume 7 of the Utah Code Annotated (1953); and protection on private land is left entirely at the discretion of the private land owner. Of the seven significant sites located in Montezuma Canyon, three are partially or wholly privately owned, two sites are partially or wholly State owned, and two sites are entirely on public domain. Management under these circumstances is virtually impossible.

d. Public Apathy

Apathy on the part of citizens at the local, State and National level is a major contributing factor to the depredation of the archeological resource. The only group which appears genuinely shocked over the course of events are the professional archeologists. In terms of protecting the resource, the local population is the key group. If the local people practice and promote protection of the antiquities, little else would have to be done to implement an effective protection program. The local population, generally speaking, regard the resource as one having an unlimited supply. They feel that there is plenty there for both the amateur pot hunter and the professional archeologist. They resent the scientist who excavate ruins in their locality and carry away the trophies, never to be seen again by the local people or the touring public. This, in the mind of many, is equally as serious, morally, as the procedure followed by

the commercial Moki digger. Archeologists maintain that artifacts removed from a ruin without proper scientific identification are rendered worthless, scientifically speaking. On the other hand, local people maintain that a pot sitting in a museum window in Denmark, separated by an ocean from its place of origin, has little or no value in terms of understanding the culture from which it came. In the course of this study, archeologists from the National Park Service and the University of Utah were contacted and generally agreed that after an artifact had fulfilled its scientific purpose that it would best serve humanity by being exhibited at or near the site of origin.

For many years the local business men have been told that the archeological resource represents a great potential resource in terms of the tourist dollar. Their attitude towards this is that "talk is cheap." They will believe this when the vacant motels begin to fill up and cash starts rolling into the cash register. Action speaks louder than words and the attitude of the local population is not going to change appreciably until they see action. Tourists just do <u>not</u> stop unless there are developed facilities which provide entertainment and comfort.

Public apathy on the local level will not change appreciably until the resource is put in its proper perspective. The local population must come to understand that antiquities are not a renewable resource. Like minerals, oil and gas, when the source is depleted, the resource is gone. The key to "education of the public" is replacement of tourism in their minds rather than "digging" as the resource which will benefit them most. Scientific values are of secondary consideration to the resident

and tourist alike; money in the cash register is a universal language of instant appeal to the local people and visual impact is the most impressive to the tourist. By preserving the resource, they will create an economic base which will be with them forever--the tourist industry.

6. MULTIPLE USE MANAGEMENT AND THE ARCHEOLOGICAL RESOURCE

If the provisions of the Antiquities Act were strictly interpreted practically every use on public domain would be incompatible with the archeological resource. Domestic livestock and big game push over walls, and tramp and mutilate surface artifacts. The root systems of piñon-juniper type have a devestating effect on subsurface ruins when they are ripped from the ground during chaining operations. The prospector, road builder and miners mutilate ruins with their heavy equipment. Recreationists collect and destroy valuable artifacts.

The problem in determining the relative value of the archeological resource in relation to other uses is that it is difficult if not impossible to assign a monetary or a qualitative value to an ancient ruin. From an archeologist's point of view, all ruins, be they dwellings, ceremonial buildings, farm structures, granaries, etc., are a vital scientific resource. No distinction can be made (according to National Park Service archeologists) as to the relative value of one mound over another, based on surface facts only.

The archeological resource should be subject to the same scrutiny as any other use on public domain. Under the multiple use concept no one resource can have a monopoly on public land. Archeologists have in the past been forced to make decisions as to what was and what was not significant ruins and the same decisions must be rendered on public lands

under BLM jurisdiction now.

In a recent conversation with Dr. Charlie Steen, Chief Archeologist for the National Park Service, Santa Fe Region, he indicated that there is a point of diminishing returns where cost exceeds benefit and that a decision can and must be made concerning the relative value of ancient ruins. The district manager is not qualified to make such decisions without the staff assistance of a professional archeologist, and the archeologist must have all the facts in front of him in the form of an inventory before he can accurately prepare a staff report.

The archeological resource can be managed on a multiple use basis; however, the laws governing the protection of antiquities must be flexible so that the full potential of the public domain can be realized.

PART III

RECREATION RESOURCE

PART III RECREATION RESOURCE

1. INTRODUCTION

The region under consideration is located in the southeastern corner of the State. It is bordered on the north by the Blue Mountains, on the east by the Colorado-Utah state line, on the south by the San Juan River, and on the west by Lake Powell. There are two distinct geographic areas which are separated by a sheer, sharply defined fault known as the Comb Ridge (see Fig. 1). These areas shall be referred to as the Montezuma and the White Canyon recreation complexes, Montezuma occupying the easterly portion of the region and White Canyon the westerly portion.

a. White Canyon Recreation Complex

This area is characterized by deep, colorful gorges which are literally filled with Indian ruins preserved since the ancient Anasazi Indian culture disappeared approximately 700 years ago. Clear mountain springs fed by the snow-capped peaks of the Blue Mountains provide a plentiful culinary water supply. Scenic and historical attractions in this area include Mexican Hat, the Goosenecks of the San Juan, Natural Bridges National Monument, the San Juan River, Lake Powell, the Grand Gulch, Dark Canyon, Halls Crossing (Colorado River) and the old Mormon Trail leading out from the Hole in the Rock. Utah Highway 95, which is destined to be one of the finest scenic highways in America, passes through the center of the area. The unique combination of scenic beauty and ancient cliff dwellings make this area extremely valuable as a recreation resource.

b. The Montezuma Recreation Complex

This area has little of the scenic qualities attributed to the White Canyon Complex. However, it possesses one of the largest archeological

resources in terms of total ruins that may be found anywhere in the United States. The terrain is generally rolling hills with numerous gullies and washes, none of which have the splendor of the formerly mentioned complex. Montezuma Canyon and its drainages constitute most of the area. Much of the northerly portion is under cultivation with the central and southerly portions being more arid and varying in vegetative cover from pinon-juniper to sagebrush to practically barren soil. Archeologists from the National Park Service and the several universities in surrounding states place a very high value on the scientific value of the mound type ruins which are abundant in this area. The highest frequency of digging has occurred in this area.

2. RECREATION INVENTORY

It soon became apparent that a complete recreation inventory would not be possible in the time limit established for this study. It was concluded that the inventory should be restricted to those sites which offer the greatest potential for a 10-year development plan. There were 17 sites which complied with this criteria. Recreation site inventory forms 4-1644 were executed on 13 of these sites and a recreation area form 4-1643 was executed on the Grand Gulch Recreation Area.

For details on the individual sites, refer to the respective site inventory forms. The proposed development schedule is shown in figures 3 and 4 of Part I. The site locations are delineated on Overlay No. 1 of the general map.

3. GRAND GULCH RECREATION AREA

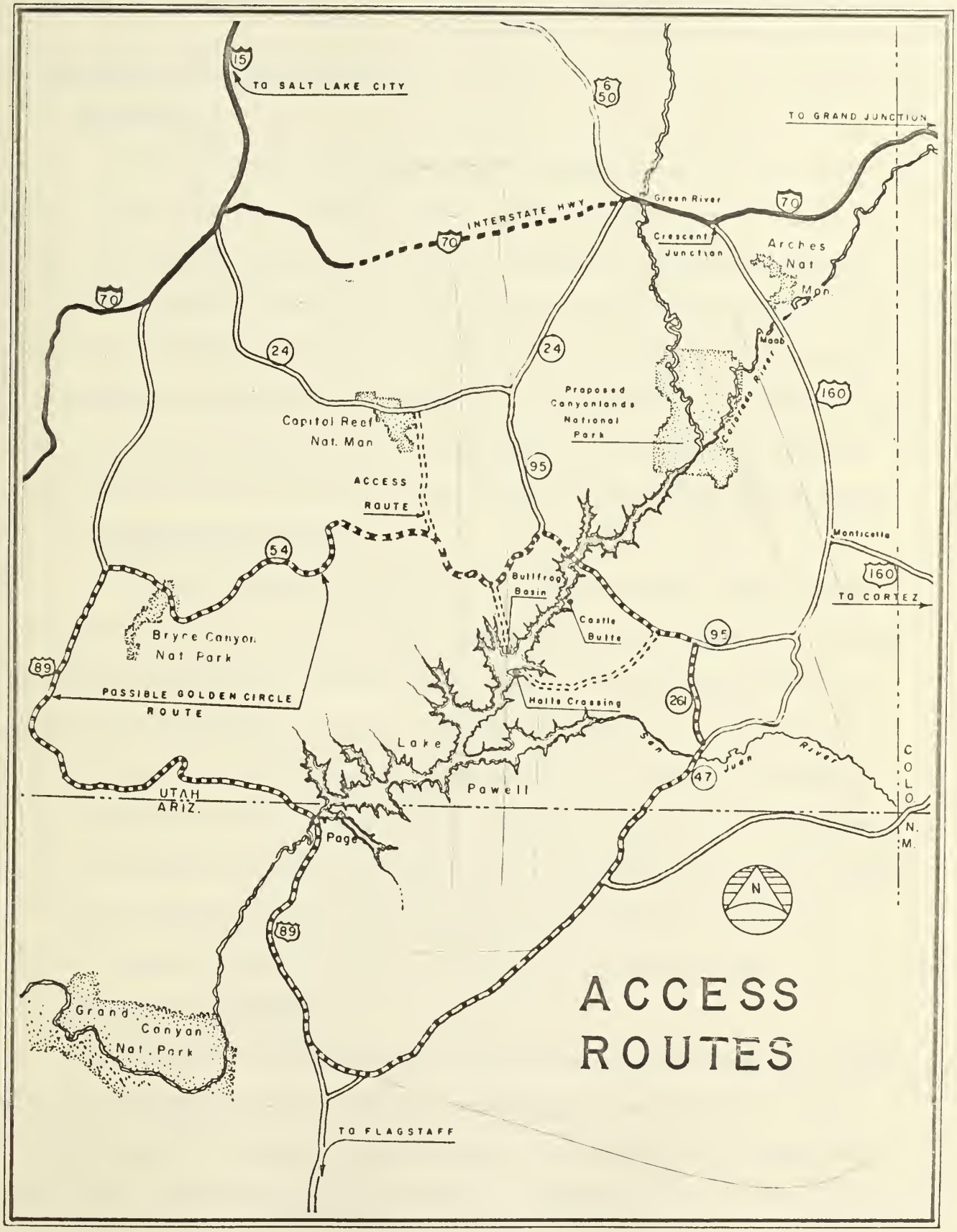
Because of the unique nature and vital importance of Grand Gulch,

it was deemed pertinent to make special mention of it in this report. The combination of scenic beauty and prehistoric Indian ruins is unexcelled.

Grand Gulch is a deep gorge winding its way for more than 50 miles from the foot of Maverick Point to the San Juan River. Within and among its sheer rock walls lie a wealth of prehistoric Indian ruins. It was here that Al Wetherill discovered the cultural gap between the Basketmaker II and Pueblo III, a period of 900 years. It is accessible only by horseback or on foot along hazardous trails. Grand Gulch is an ideal primitive area from a recreation standpoint and offers much to those interested in seeking solace in a land far removed from the ordinary cares of life.

PART IV

TOURIST IMPACT



ACCESS ROUTES

PART IV TOURIST IMPACT

A PROJECTION OF FUTURE TOURIST USE

1. INTRODUCTION

The problem of estimating future tourist visits is a difficult one. There are so many elements which could affect the use in this area and all of them in unknown quantities. An excellent study was completed by the University of Utah's Bureau of Economic and Business Research in 1962 on the proposed Canyonlands National Park. Section 4 of that study was devoted to projections of tourism in the Canyonlands Area. Fortunately, our study area is adjacent to the Canyonlands and this will allow us to rely heavily on the data and projections resulting from Canyonlands study.

2. THE TIME-DISTANCE FACTOR

Major strides have been taken by all the western states toward completion of the interstate highway system which would connect the critical recreation resource of southern Utah to most of the population centers in the west. For example, based on a 50-mile-an-hour rate, one could travel to the edge of the Golden Circle (see Figures 7 and 8) from Los Angeles in 11 hours, San Francisco in 15 hours, Salt Lake City in four hours, Denver in seven hours, Albuquerque in three hours, and Phoenix in six hours. This would place approximately 21 million people withon one day's drive of Southern Utah in 1960, 27 million by 1970 and 31 million by 1975.

3. INTERNAL ACCESSIBILITY

There is an excellent road system which encircles the rich scenic-land of southeastern Utah. However, the interior road system has just recently begun to develop. The key highway which will provide access to Lake Powell and the study area is Utah-95. Presently, this is a gravel-dirt

road practically void of drainage. The State Highway Department maintains this 130 mile stretch of road on a year-round basis. However, the combination of flash floods and poor drainage makes this a dangerous highway for the inexperienced driver to traverse. This condition is not destined to remain for long. In 1963, the State let a three million dollar contract for construction of single span bridges across the Dirty Devil and Colorado rivers and approximately seven miles of approach roads. Contracts for 11 miles of road up North Wash will be let July 1, 1964, in addition to the White Canyon Bridge and seven additional miles of approach road which will be contracted at the same time. All of this work is scheduled for completion in 1966.

Other roads which will undoubtedly be completed prior to 1970 are: The Capitol Reef-Bullfrog Basin road; the Halls Crossing-Maverick Point road; and the North Wash-Eggnog road.

The Green River-Fremont Junction portion of Interstate-70 will be completed and ready for travel by 1967. The entire I-70 which is the major traffic route from east to west is scheduled for completion by 1975. A strong proposal has been made by Senator Bennett to establish a scenic parkway (the Golden Circle) through southern Utah which would connect all the national parks and monuments. This would open up a vast amount of public domain for recreation use.

Garfield County has made considerable improvements on the Circle Cliffs-Henry Mountain road. San Juan County, which is the second richest county in Utah, has undertaken several road improvement programs in the Montezuma and Lake Powell area. The county presently maintains 1,600 miles of road and is very much aware of the potential impact on on the county

recreation resource. The oil and mining industries have constructed innumerable roads throughout southern Utah in conjunction with uranium and oil and gas exploration. BLM has constructed several multiple use management roads which are recreation oriented and plans on accelerating their development schedule.

4. METHODOLOGY FOR PROJECTING VISITOR USE

Visitor use trends are fairly well isolated to the National Parks and Monuments in the area. From 1952 to 1957, visits to Arches were relatively stable at around 30,000 per year. In 1957, an attractive entrance to the Monument and a visitor center were constructed within the Monument. The resulting increase in tourist use is shown by the rates of increase in visits:

1957-1958	50.8%
1958-1959	48.6%
1959-1960	20.0%
1960-1961	25.0%

Is this inference valid? Could not the increase be due as much or more to the general increase in tourism and travel than to the improved facilities?

-Carl B. Johnson, archaeologist, 1965

A similar trend occurred at Capitol Reef when Utah the Monument, was improved.

It would be safe to assume then that there is a direct correlation between road and facilities development and visitor use. This indicates that demand for the type recreation attractions organic to the study area is ever present and, as roads and facilities are developed, this demand will exert itself at an ever increasing rate.

Projecting visitor use from the data available from the National Parks and Monuments would be extremely difficult, if not impossible, so it was necessary to turn to a more reliable basis. The Utah State Highway Department traffic counts provided us with a base which gave long term trends and also future projection which they had derived on highways

leading from the Interstate system. Based on these traffic counts and their corresponding trends, future traffic counts could quite readily and accurately be projected. The total yearly visitor use projected for the study area was derived through the following process; first, five major points which channel traffic into the study area were identified which included U. S. 160 south via Crescent Junction, Utah-24 south from Interstate-70, Utah-24 east via Capitol Reef National Monument, U. S. 160 west from Colorad-Utah state line, and Utah-47 north from Arizona; second, traffic moving towards the study area from these points was projected to 1975 using either projections previously made by the Highway Department or projecting increases on a 5% per year basis which is a rule of thumb method that has proven extremely accurate over a period of years by the State Highway Department; third, an assumption was made as to the number of vehicles that would reasonably leave the general flow of traffic and enter the study area; fourth, an assumption was made as to the percentage of tourist oriented vehicles in the diverted traffic; and, fifth, a 2.8 multiplier 1/ was used to determine the total number of visitors per day which, in turn, multiplied by 365 gave the total yearly visitors. A recent study 2/ in this general area has shown that each visitor stays 1.6 days. Therefore, by using this constant as a multiplier, the total visitor days use was derived.

The projection was based on the premise that Utah-95 would be an all-weather hard-surfaced highway beginning in 1964 and that all the

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1/ A Utah State Highway Department study on tourist traffic in 1960 revealed that, on an average, there were 2.8 persons per car.

2/ The Canyonlands Report, prepared by the University of Utah, p. 173.

CHART NO. TOTAL VISITOR USE IN S[illegible]Y AREA 1964-1975

Assuming Highway U-95 is Traversible Beginning in 1964 — Totals [illegible]ter Levy of Penalty Scores*

Year	1 Average Daily Traffic Count	2 Total Yearly Visitors	3 Total Yearly Visitor Use	4 Peak Periods Daily Visitors	5 Weighted To[illegible] Visitor Use	6 Weighted Average Daily Visitors Peak Periods	7 Camp Units	8 Picnic Units
1964	191.5	164,514.5	262,916.8	765.2	26,291.9	76.5	6	
1965	201.5	173,010.0	276,816.0	805.8	41,522.4	120.9	10	
1966	246.7	181,806.5	290,890.4	846.8	58,178.1	169.4	16	
1967	264.1	194,873.5	311,797.6	907.5	155,898.8	453.7	42	6
1968	280.6	207,028.0	331,244.8	964.2	231,871.3	[illegible].9	62	8
1969	300.2	221,701.0	354,721.6	1,032.5	319,249.5	[illegible].2	86	13
1970	323.9	239,476.5	383,162.6	1,115.3	383,162.6	[illegible].3	104	16
1971	354.6	262,544.5	420,071.2	1,222.8	420,071.2	[illegible].8	114	18
1972	393.9	292,328.5	467,725.6	1,361.4	467,725.6	1[illegible].4	126	19
1973	444.5	330,142.5	528,228.0	1,539.3	528,228.0	1,[illegible].3	142	21
1974	518.5	386,608.0	618,572.8	1,800.5	618,572.8	1,8[illegible].5	166	27
1975	638.6	478,259.5	765,215.2	2,227.5	765,215.2	2,227.5	205	30

(1) through (6) see _____ in index

(7) In statistics released recently on visitor use in the Flaming Gorge area, 15% of the visitors came for the primary purpose of camping. It could reasonably be assumed that an additional 5% camped, which came for the primary purpose of fishing, hunting and to participate in water sports. It is reasonable to assume that the clientele at Lake Powell will be comparable to that at Flaming Gorge, therefore, the assumption is made that 20% of the total visitors will require camping accommodations. The number of camp units was arrived at by taking 20% of the weighted peak daily visitors.

(8) Based on Flaming Gorge statistics 3% of the total users were picnickers. This same ratio was applied to potential users in the study area.

*See _____ in index for definition of penalty score.

facilities proposed by the National Park Service at the Castle Butte, Bullfrog Basin and Halls Crossing sites on Lake Powell would be completed at the beginning of the 1964 season. This, of course, is not true. Therefore, it was necessary to establish penalty scores which would correlate with the percentage of completion of these various projects. The greatest weight was placed on the completion schedule for Utah-95 since it is felt that this presents the greatest obstacle in terms of preventing visitors from using this area. The resultant weighed totals, therefore, represent the anticipated visitor use depending, of course, on the development of the road and facilities.

5. ESTIMATED VISITS TO AREAS ADJACENT TO UTAH-95

It is interesting to note that the big increase in use will occur in 1967. There are three important reasons for this; first, 1967 is the proposed completion date for the Green River-Fremont Junction portion of Interstate-70. This stretch of highway will eliminate several hours of travel for through traffic; second, all of the rough areas in U-95 will be eliminated by this time, the three bridges are scheduled for completion in 1966, and grading and surfacing will be well on the way to completion; and, third, the proposed Canyonlands National Park should see its first big year of operation at this time.

Most of the interior roads should be completed by 1970. This would include Utah-95, Halls Crossing-Maverick Point road, the Bullfrog Basin-Capitol Reef road, and the North Wash-Eggnog road. One would expect a peak period at this time with gradually leveling off period in the next few years. This should not be so. By 1970, the interstate system from east to west will begin to materialize. Traffic on I-70, according to Utah

State Highway Commission estimates will be compounding itself each year until 1975 when the interstate system is scheduled for completion. If there is to be a leveling out period, it should come some time after 1975.

It is doubtful that any of the BLM recreation or archeological sites, with the possible exception of Grand Gulch, could be classified as destination type sites. The balance of the responsibility to satisfy the needs of the visitors will be to provide "en route" type facilities. In terms of en route facilities, there is an immediate need for 10 camp and picnic units. By 1970, there will be a need for 104 camp and 16 picnic units and, by 1975, 205 camp units and 30 picnic units will be required to satisfy the needs of the touring public. With this great influx of visitors, we can expect depradation of our archeological resource to increase proportionately; therefore, immediate action should be taken to protect and interpret these vauable ruins. It is further apparent that there is a critical need for planning between the present and 1966. The facilities should proceed the impact, therefore, preparation for the big impact in 1967 should follow an orderly pattern. Ideally, 1964 and 1965 would be planning years and 1966 would be the construction year. This procedure can be followed to a certain extent. However, construction should begin at the earliest possible time to accommodate the influx which is anticipated in 1964 and 1965.

APPENDIX

BASIC ASSUMPTIONS USED IN THE VISITOR USE PROJECTION

The following explains in detail the assumption used for a basis in the projection. The numbers correspond to the columns on the accompanying charts.

(1) Average Daily Traffic Count - The 1963 count was obtained directly from the Utah State Highway Department. The yearly increase in traffic varied with each of the access points. For specific information as to how these increases were projected, see separate charts for each point.

(2) Total Traffic Diverted - See separate charts.

(3) Traffic Traveling Via U-95 - See separate charts.

(4) Tourist Vehicles - See separate charts.

(5) Average Daily Visitors - In a study conducted in 1960 by the Utah State Highway Department entitled, "Tourist Study of Out of State Motorists," it was discovered that the average persons per vehicle was 2.8. Multiplying the tourist vehicles per day by 2.8 then provided an average daily visitor count.

(6) Total Yearly Visitors - Equals average daily visitors times 365.

(7) Total Yearly Visitor Use - Studies conducted in the Canyonlands area by the Bureau of Economic and Business Research of the University of Utah indicate that the average length of stay per visitor was 1.6 day. Therefore, using this constant as a multiplier with the total yearly visitor figures, a total yearly visitor use figure was derived.

(8) Weighted Total Visitor Use - All the aforementioned assumptions were based on the premise that Utah-95 would be an all-weather hard surfaced highway beginning in 1964. Of course this is not true, and, therefore, an assumption was made that the total visitor use would increase at a direct proportion to the completion of this highway and the completion of facilities at the Bull Frog Basin, Halls Crossing and Castle Butte sites on Lake Powell.

Following is a list of the completion scheduled for these facilities. It should be kept in mind that these schedules are dependent upon the availability of funds and will deviate accordingly.

AN ESTIMATED COMPLETION SCHEDULE FOR UTAH-95
AND
FACILITIES ON THE NORTH PORTION OF LAKE POWELL

Year	Lake Powell	Utah-95	% of Total Potential Tourists Visiting Area
1963	Ferry concession let at Bull Frog-Halls Crossing area and Hite area.		
1964	Bull Frog Basin - 3 employee residences; 4-unit seasonal employee apartment; water, sewer, power and LP gas systems; portable public comfort station; 50-site campground; 2 public comfort stations in campground; 25-site picnic area; public boat dock; buoys and navigational aids; repair shop and fire-house, fencing; ground improvements; 10-mile access road; campground roads; circulatory roads, walks and driveway--total cost $1.4 million. Castle Butte - access road to U-95--total cost $202,600.	North Wash section - grading and drainage.	10%
1965	Boat ramps and basic facilities complete at Castle Butte and Bull Frog.	Colorado and Dirty Devil Bridges and approach roads complete.	15%
1966	Facilities completed at all sites.	White Canyon bridge and approach road complete.	20%
1967		All rough spots eliminated and at least ½ total highway surfaced.	50%
1968		Continued highway improvement	70%
1969		Continued highway improvement.	90%
1970		Entire route completely surfaced.	100%
1975	Will attract all potential visitors.		

CHART NO. VISITORS ORIGINATING FROM CRESCENT JUNCTION

Assuming U-95 is an All-Weather Road Beginning in 1964

Year	1 Average Daily Traffic Count	2 Total Traffic Diverted	3 Traffic to U-95	4 Tourist Vehicles	5 Total Average Daily Visitor	6 Total Yearly Visitors	7 Total Yearly Visitor Use	8 Totals After Levy of Penalty Scores Weighted Total Visitor Use
1963	1,265							
1964	1,328	159.3	39.8	29.8	83.4	30,441.0	48,705.6	4,870.6
1965	1,394	167.2	41.8	31.4	87.9	32,083.5	51,333.6	7,700.0
1966	1,463	175.5	43.9	32.9	92.1	33,616.5	53,786.4	10,757.3
1967	1,620	194.4	48.6	36.5	102.2	37,303.0	59,684.8	29,842.4
1968	1,749	209.9	52.5	39.4	110.3	40,259.5	64,415.2	45,090.6
1969	1,923	230.8	57.7	43.3	121.2	44,238.0	70,780.8	63,702.7
1970	2,153	258.4	64.6	48.5	135.8	49,567.0	79,307.2	79,307.2
1971	2,475	297.0	74.3	55.7	156.0	56,940.0	91,104.0	91,104.0
1972	2,920	350.4	87.6	65.7	184.0	67,160.0	107,456.0	107,456.0
1973	3,533	424.0	106.0	79.5	222.6	81,249.0	129,998.4	129,998.4
1974	4,451	534.1	133.5	100.1	280.3	102,309.5	163,695.2	163,695.2
1975	6,028	723.7	180.9	135.7	380.0	138,700.0	221,920.0	221,920.0

VISITORS ORIGINATING FROM CRESCENT JUNCTION

(1) Average Daily Traffic Count - The 1963 count is the actual count computed by the Utah State Highway Department. The 1975 figure is the projection made by the State Highway Department in conjunction with planning for Interstate-70. All intervening yearly projections were based on percent completion of various portions of Interstate-70.

(2) Total Traffic Diverted - In a study recently completed by Bureau of Economic and Business Research of the University of Utah and the Utah State Highway Department it was discovered that 9% of the traffic traveling US-40 was diverted into the Flaming Gorge area. It was assumed for purposes of this report that the drawing power of Lake Powell is equal to or greater than Flaming Gorge and, therefore, it would be safe to assume that at least 9% of the traffic on I-70 would be diverted to the Lake Powell area. It was assumed that 3% would leave via Crescent junction and 6% via U-24 and I-70 Junction. The reason for the larger percentage in the latter is the fact that this route via US-50 is more than 100 miles nearer to Lake Powell from the major population centers of Utah than any other route.

(3) Traffic Traveling via U-95 - Since this is the only route into the lake from this access point, 100% of the diverted traffic would travel U-95.

(4) Tourist Vehicles - It was assumed that 75% of the vehicles would be tourist oriented.

(5) through (8) - See cover page.

CHART NO. VISITORS ORIGINATING FROM U-24 AND I-70 JUNCTION

Assuming U-95 is an All-Weather Road Beginning in 1964

Year	1 Average Daily Traffic Count	2 Total Traffic Diverted	3 Traffic To U-95	4 Tourist Vehicles	5 Total Average Daily Visitor	6 Total Yearly Visitors	7 Total Yearly Visitor Use	Totals After Levy of Penalty Scores 8 Weighted Total Visitor Use
1963	1,550							
1964	1,627	97.6	48.8	36.6	102.5	37,412.5	59,860.0	5,986.0
1965	1,708	102.5	51.3	38.5	107.8	39,347.0	62,955.2	9,443.3
1966	1,793	107.9	54.0	40.5	113.4	41,391.0	66,225.6	13,245.1
1967	1,972	118.3	59.2	33.3	124.3	45,369.5	72,591.2	36,295.6
1968	2,130	127.8	63.9	47.9	134.1	48,946.5	78,314.4	54,820.0
1969	2,343	140.6	70.3	52.7	137.6	53,874.0	86,198.4	77,578.6
1970	2,624	157.4	78.7	59.0	165.2	60,298.0	96,476.8	96,476.8
1971	3,018	181.0	90.5	67.9	190.1	69,386.5	111,018.4	111,018.4
1972	3,561	213.7	106.9	80.2	224.6	81,979.0	131,166.4	131,166.4
1973	4,309	258.5	129.3	97.0	271.6	99,134.0	158,614.4	158,614.4
1974	5,515	330.9	165.5	124.1	347.5	126,837.5	202,940.0	202,940.0
1975	7,570	454.2	227.1	170.3	476.8	174,032.0	278,451.2	278,451.2

(1), (2) and (4) See notes on Crescent Juntion access point.

(3) Traffic traveling via U-95. It is anticipated that 50% of the traffic will make the loop via U-95.

(5) through (8) See cover page.

CHART NO[illegible] VISITORS ORIGINATING FROM [illegible]4 AND U-95 JUNCTION

Assuming U-95 is an All-Weather Road Beginning in 1964

Year	1 Eastbound Average Daily Traffic Count	2 Total Traffic Diverted	3 Traffic to U-95	4 Tourist Vehicles	5 Total Average Daily Visitor	6 Total Yearly Visitors	7 Total Yearly Visitor Use	8 Totals After Levy of Penalty Scores Weighted Total Visitor Use
1963	65							
1964	68	34.0	34.0	25.5	71.4	26,061.0	41,697.6	4,169.7
1965	72	36.0	36.0	27.0	75.6	27,594.0	44,150.4	6,622.6
1966	76	38.0	38.0	28.5	79.8	29,127.0	46,603.2	9,320.6
1967	80	40.0	40.0	30.0	84.0	30,660.0	49,056.0	24,528.0
1968	84	42.0	42.0	31.5	88.2	32,193.0	51,508.8	36,056.2
1969	88	44.0	44.0	33.0	92.4	33,726.0	53,961.6	48,565.4
1970	92	46.0	46.0	34.5	96.6	35,259.0	56,414.4	56,414.4
1971	97	48.5	48.5	36.4	101.9	37,193.5	59,509.6	59,509.6
1972	102	51.0	51.0	38.3	107.2	39,128.0	62,604.8	62,604.8
1973	107	53.5	53.5	40.1	112.3	40,624.5	64,999.2	64,999.2
1974	112	56.0	56.0	42.0	117.6	42,924.0	68,678.4	68,678.4
1975	118	59.0	59.0	44.3	124.0	45,260.0	72,416.0	72,416.0

VISITORS ORIGINATING FROM U-24 AND U-95 JUNCTION

(1) Average Daily Traffic Eastbound - By the end of 1964 Highway U-95 should be surfaced in its entirety. This should stimulate a rapid increase in traffic. However, I-70 will be ready for use in 1967 and much of the present U-24 traffic will be diverted to the interstate. It was concluded that one would counteract the other and that applying the standard 5% per year increase would in the long run give the more accurate projection.

(2) Total Traffic Diverted - This highway is presently and will continue to be a tourist oriented highway; for this reason it is safe to assume that at least 50% of the eastbound traffic will turn on U-95 at Hanksville and make the scenic loop past Lake Powell.

(3) Traffic Making Loop - One hundred per cent of the traffic diverted.

(4) Tourist Vehicles - Of the total diverted vehicles it is estimated 75% will be tourist oriented.

(5) through (8) - see cover sheet.

CHART NO. VISITORS ORIGINATING FROM US UTAH-COLORADO LINE

Assuming U-95 is an All-Weather Road Beginning in 1964

Year	1 Average Daily Traffic Count Westbound	2 Total Traffic Diverted	3 Traffic to U-95	4 Tourist Vehicles	5 Total Average Daily Visitor	6 Total Yearly Visitors	7 Total Yearly Visitor Use	8 Totals After Levy of Penalty Scores Weighted Total Visitor Use
1963	475.0							
1964	499.0	149.7	37.4	37.4	104.7	38,215.5	61,144.8	6,114.8
1965	524.0	157.2	39.3	39.3	110.0	40,150.0	64,240.0	19,636.0
1966	550.0	165.0	41.3	41.3	115.6	42,194.0	67,510.4	13,502.1
1967	577.5	173.2	43.3	43.3	121.2	44,238.0	70,780.8	35,390.4
1968	606.5	181.9	45.5	45.5	127.4	46,501.0	74,401.6	52,081.1
1969	636.5	190.9	47.7	47.7	133.6	48,764.0	78,022.4	70,220.2
1970	668.0	200.4	50.1	50.1	140.3	51,209.5	81,935.2	81,935.2
1971	701.5	210.4	52.6	52.6	147.3	53,764.5	86,023.2	86,023.2
1972	736,5	220.9	55.2	55.2	154.6	56,429.0	90,286.4	90,286.4
1973	773.0	231.9	58.0	58.0	162.4	59,276.0	94,841.6	94,841.6
1974	811.5	243.4	60.8	60.8	170.2	62,123.0	99,396.8	99,396.8
1975	852.0	255.6	63.9	63.9	178.9	65,298.5	104,477.6	104,477.6

VISITORS ORIGINATING FROM US-160 UTAH-COLORADO LINE

(1) Average Daily Traffic Westbound - Based on the 1963 actual count by the Utah State Highway Department and projected on the 5% increase per year basis.

(2) Out-of-State Cars - By actual count the Utah State Highway Department discovered that 30% of the passenger cars entering the State via US-160 were out-of-State vehicles.

(3) Traffic to U-95 - Since this would be the major access route to Lake Powell for visitors from Southern Colorado, New Mexico, Oklahoma and Texas, it was estimated that 25% of the out-of-State passenger cars would make the loop via U-95 to Lake Powell.

(4) Tourist Vehicles - For any type through traffic this would be several miles off from the major through routes; therefore, it is assumed that 100% of the diverted traffic would be tourist oriented.

(5) through (8) - See cover page.

CHART NO. VISITORS ORIGINATING FROM U-4 RIZONA-UTAH LINE

Assuming U-95 is an All-Weather Road Beginning in 1964

Year	1 Average Daily Traffic Count Northbound	2 Total Traffic Diverted	3 Traffic to U-95	4 Tourist Vehicles	5 Total Average Daily Visitor	6 Total Yearly Visitors	7 Total Yearly Visitor Use	8 Totals After Levy of Penalty Scores Weighted Total Visitor Use
1963	120.0							
1964	126.0	--	31.5	31.5	88.2	32,193.0	51,508.8	5,150.8
1965	132.5	--	33.1	33.1	92.7	33,835.5	54,136.8	8,120.5
1966	139.0	--	69.5	34.7	97.2	35,478.0	56,764.8	11,353.0
1967	146.0	--	73.0	36.5	102.2	37,303.0	59,684.8	29,842.4
1968	153.5	--	76.7	38.3	107.2	39,128.0	62,604.8	43,823.4
1969	161.0	--	80.5	40.2	112.6	41,099.0	65,758.4	59,182.6
1970	169.0	--	84.5	42.2	118.2	43,143.0	69,029.0	69,029.0
1971	177.5	--	88.7	44.3	124.0	45,260.0	72,416.0	72,416.0
1972	186.5	--	93.2	46.6	130.5	47,632.5	76,212.0	76,212.0
1973	195.5	--	97.7	48.8	136.6	49,859.0	79,774.4	79,774.4
1974	205.5	--	102.7	51.3	143.6	52,414.0	83,862.4	83,862.4
1975	215.5	--	107.7	53.8	150.6	54,969.0	87,950.4	87,950.4

VISITORS ORIGINATING FROM U-47 ARIZONA-UTAH LINE

(1) Average Daily Traffic Northbound - The estimates are based on the 1963 count and projected on the 5% increase per year basis.

(2) Out-of-State - Not applicable.

(3) Traffic to U-95 - The average daily traffic count at this point is practically 100% through traffic. Since U-95 will provide a shorter and more scenic route to points north, it is assumed that at least 50% of the northbound traffic will travel this route.

(4) Tourist Vehicles - Since much of this traffic will merely be seeking a shorter route, it is estimated that only 50% of the vehicles will be tourist oriented.

(5) through (8) - See cover page.

CLIMATOLOGICAL SUMMARY, MOAB, UTAH

Means and Extremes for Period 1926 1955

Station at Moab, Utah, Ground Elevation 4,000 Feet

Figure No. ___

Month	Temperature (°F) Means: Daily Maximum	Daily Minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	Precipitation Totals (in.): Mean	Greatest daily	Year	Snow, Sleet Mean	Mean number of days: Precip. .10 inch or more	Temperatures Max. 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Month
(a)	29	29	29	30		30		30	30		30	30	30	30	30	30	
Jan.	42.3	17.3	29.8	67	1950	-24	1930	0.63	0.60	1935+	3.7	2	0	3	30	1	Jan.
Feb.	50.2	23.4	36.8	72	1954+	-10	1929	0.69	1.20	1927	1.5	2	0	1	24	1	Feb.
Mar.	61.2	31.2	46.2	85	1953	9	1931	0.82	0.80	1929	0.5	3	0	*	19	0	Mar.
Apr.	72.8	40.5	56.7	91	1950+	15	1928	0.80	0.99	1930	T	3	*	0	5	0	Apr.
May	81.9	47.6	64.8	101	1951	28	1929	0.68	1.85	1926	T	2	6	0	*	0	May
June	91.6	55.4	73.5	113	1936	37	1939+	0.50	1.12	1927	0	2	20	0	0	0	June
July	98.4	62.3	80.4	111	1953	43	1928	0.66	1.28	1937	0	2	30	0	0	0	July
Aug.	95.2	59.8	77.5	108	1952	40	1931	0.86	1.50	1939	0	3	27	0	0	0	Aug
Sept.	86.9	51.1	69.0	104	1950	28	1934	0.91	1.81	1927	0	2	11	0	0	0	Sept.
Oct.	74.3	39.1	56.7	94	1952	15	1932	1.07	1.40	1949	T	2	*	0	7	0	Oct.
Nov.	56.2	26 5	41.4	80	1952	2'	1931	0.69	0.88	1943	0.8	2	0	*	24	0	Nov.
Dec.	44.8	19 9	32.4	68	1929	-11	1945	0.69	0.98	1926	2.1	2	0	1	29	1	Dec
Year	71.3	5	55.4	113	June 1936	-24	Jan. 1930	9 00	1.85	May 1926	8.6	27	94	5	138	3	Year

(a) Average length of record, years.

T Trace, an amount too small to measure.

\+ Also on earlier dates, months or years.

* Less than one half.

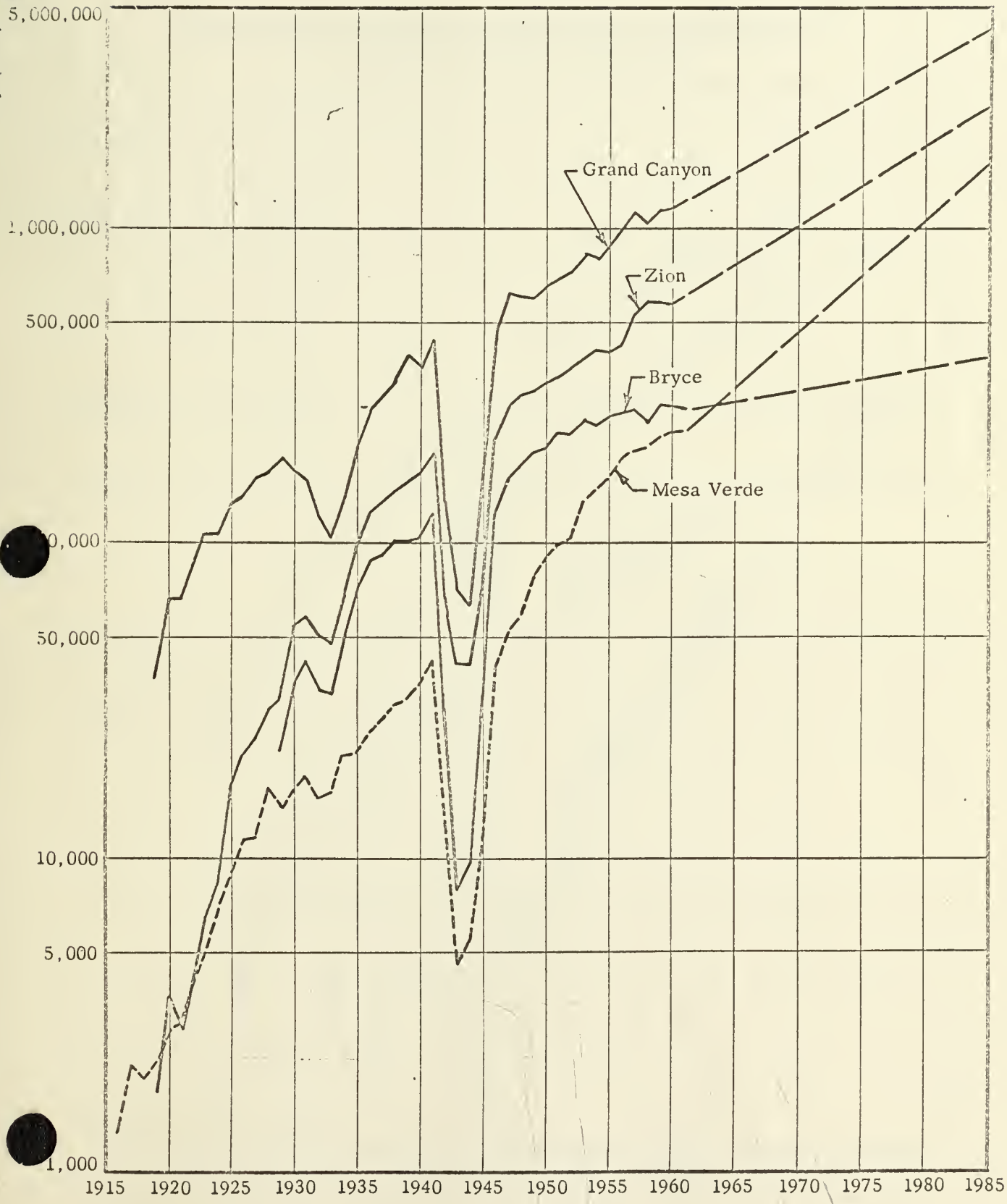
Source. U. S. Department of Commerce, Weather Bureau in cooperation with Utah Committee on Industrial and Employment Planning and University of Utah Bureau of Economic and Business Research

For purposes of comparison, following are the temperature means for the period 1919-1950, Station at Monticello, Utah, Ground elevation, 7,000 feet.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Daily Max.	34.8	38.7	46.2	57.2	66.2	76.1	81.9	80.0	72.7	61.8	48.4	38.0
Daily Min.	13.9	18.4	24.1	32.2	39.2	47.0	54.1	52.2	45.7	35.8	24.5	17.3

Figure No. ___

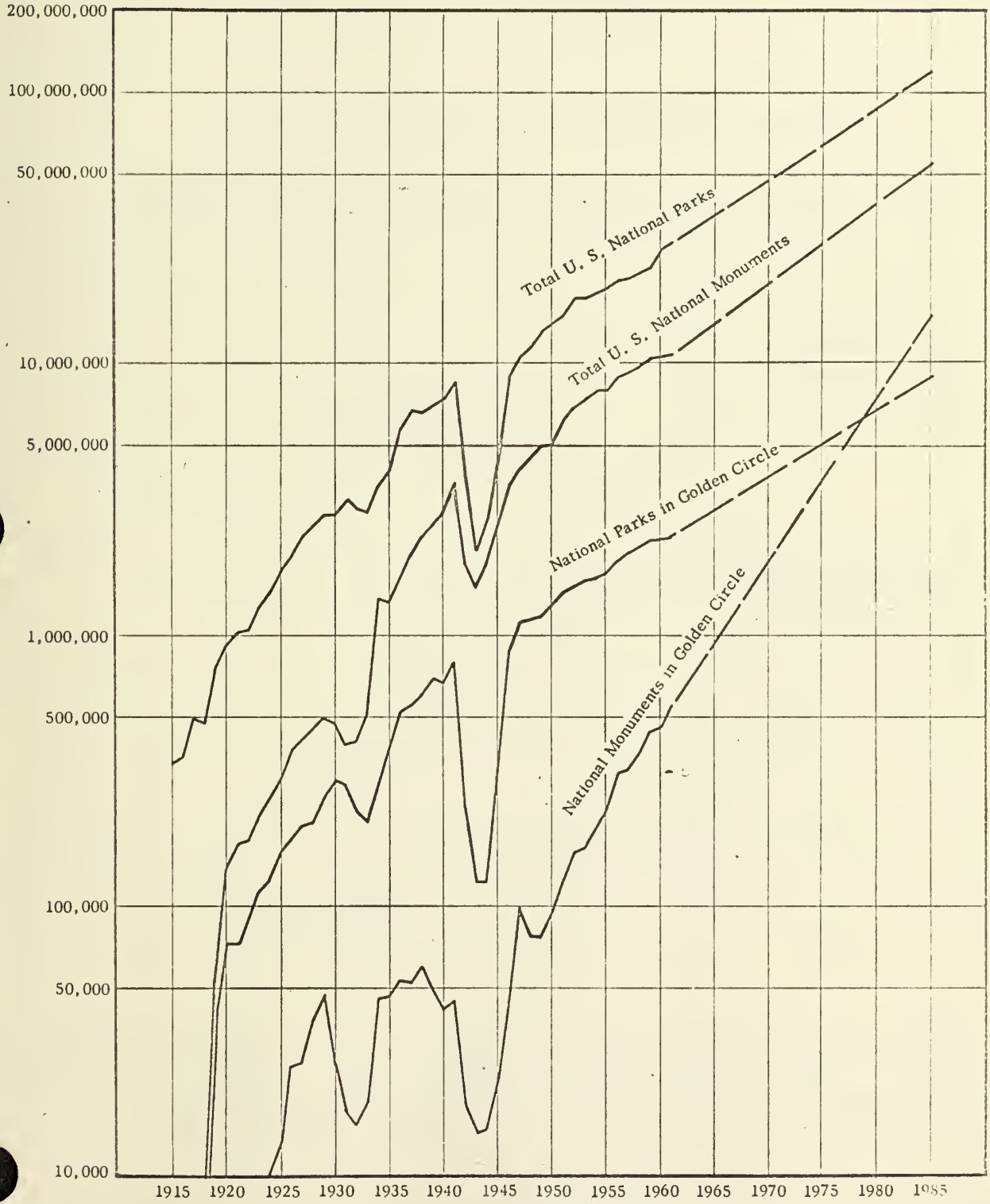
VISITOR ATTENDANCE AT NATIONAL PARKS IN GOLDEN CIRCLE REGION



Source: University of Utah, Bureau of Economic and Business Research

Figure No. ___

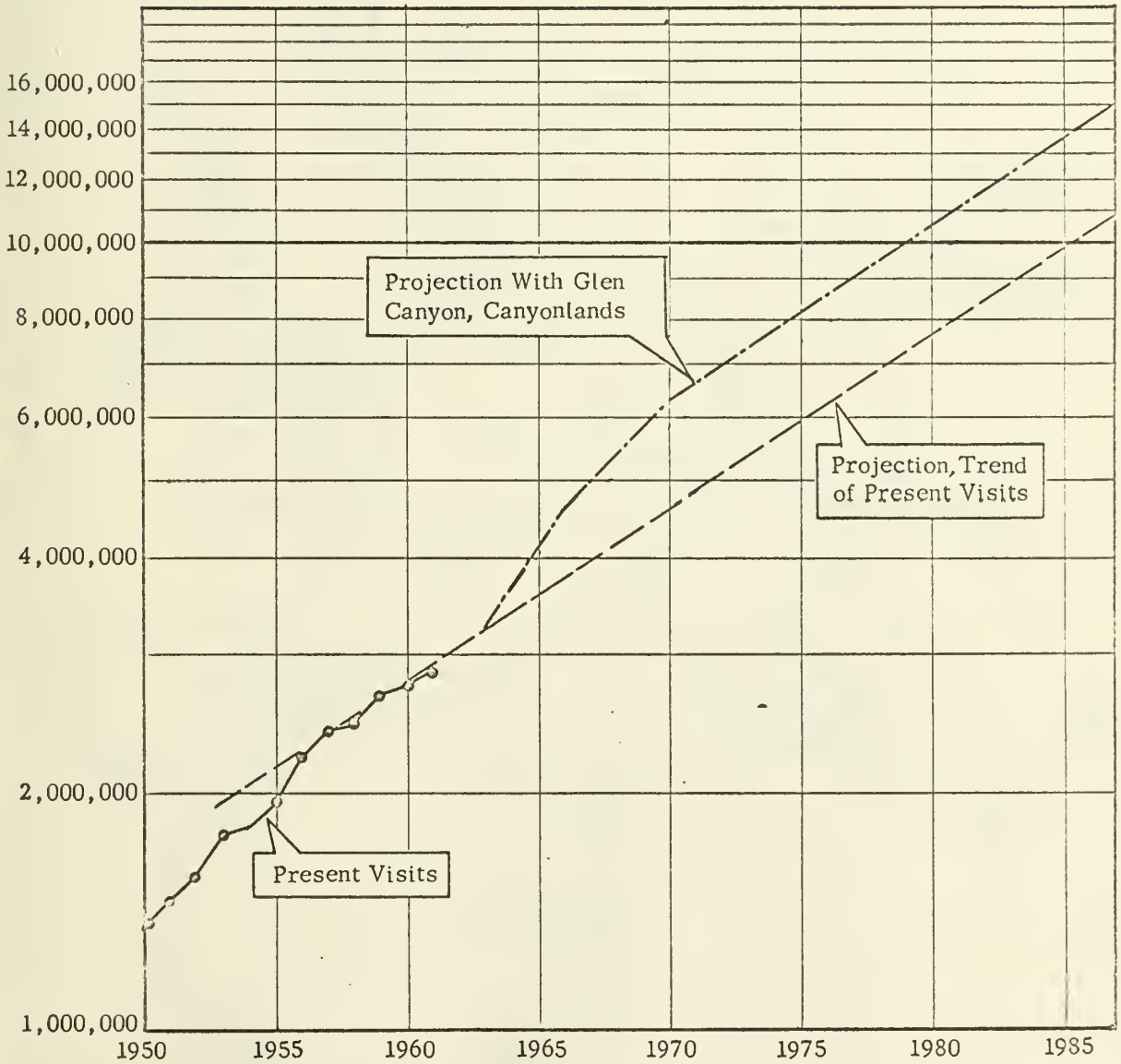
COMPARISON VISITOR ATTENDANCE AT GOLDEN CIRCLE PARKS AND MONUMENTS, ALL UNITED STATES PARKS AND MONUMENTS



Source: University of Utah, Bureau of Economic and Business Research

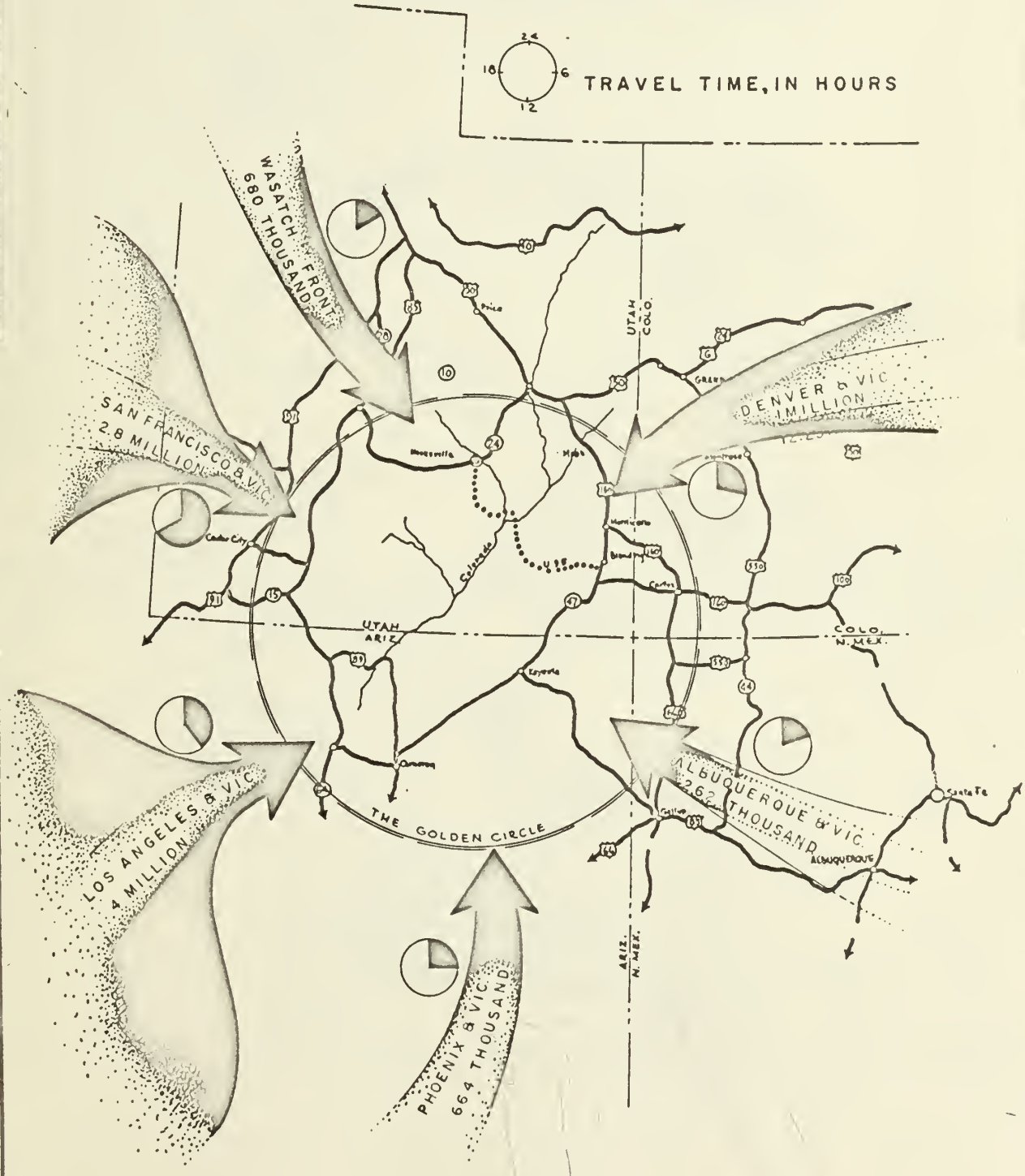
Figure No. ____

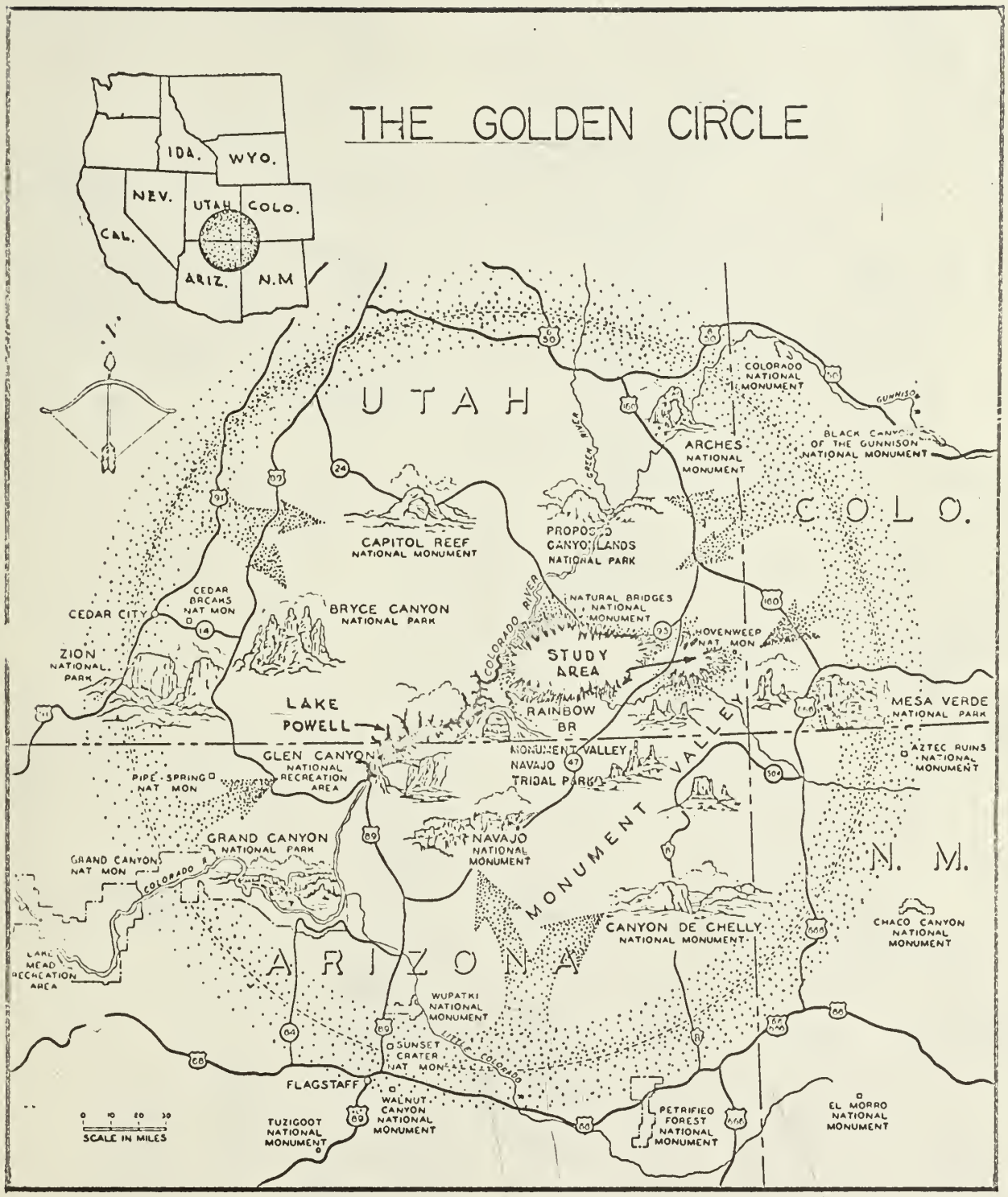
PROJECTION OF NUMBER OF VISITS TO GOLDEN CIRCLE AREA



Source: University of Utah, Bureau of Economic and Business Research

USE MAP, SHOWING METROPOLITAN AREA POPULATION AND TRAVEL TIME TO THE GOLDEN CIRCLE




THE GOLDEN CIRCLE
IDA.
WYO.
NEV.
UTAH
COLO.
CAL.
ARIZ.
N.M
UTAH
COLO.
N. M.
ARIZONA
COLORADO NATIONAL MONUMENT
GUNNISON
BLACK CANYON OF THE GUNNISON NATIONAL MONUMENT
ARCHES NATIONAL MONUMENT
GREEN RIVER
CAPITOL REEF NATIONAL MONUMENT
PROPOSED CANYONLANDS NATIONAL PARK
CEDAR BREAKS NAT MON
CEDAR CITY
BRYCE CANYON NATIONAL PARK
COLORADO RIVER
NATURAL BRIDGES NATIONAL MONUMENT
HOVENWEEP NAT MON
ZION NATIONAL PARK
STUDY AREA
LAKE POWELL
RAINBOW BR
MESA VERDE NATIONAL PARK
MONUMENT VALLEY NAVAJO TRIBAL PARK
AZTEC RUINS NATIONAL MONUMENT
GLEN CANYON NATIONAL RECREATION AREA
PIPE SPRING NAT MON
GRAND CANYON NATIONAL PARK
GRAND CANYON NAT MON
COLORADO
NAVAJO NATIONAL MONUMENT
MONUMENT VALLEY
CHACO CANYON NATIONAL MONUMENT
CANYON DE CHELLY NATIONAL MONUMENT
LAKE MEAD RECREATION AREA
WUPATKI NATIONAL MONUMENT
SUNSET CRATER NAT MON
LITTLE COLORADO
FLAGSTAFF
WALNUT CANYON NATIONAL MONUMENT
TUZIGOOT NATIONAL MONUMENT
PETRIFIED FOREST NATIONAL MONUMENT
EL MORRO NATIONAL MONUMENT
SCALE IN MILES
0 10 20 30